

PSYCHOLOGY

OF COACHING

John D. Lawther

Psychology
of Coaching

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c
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Preface

This text presents the principles and techniques applicable to the teaching of sports on the higher levels of learning. Boys who report to competitive-sports squads are usually those who have played vigorously as young children; thus they already have an active boy's knowledge of kicking and hitting, throwing, running, catching, jumping, and even falling. For this reason, the greater emphasis here is on the teaching of boys who are trying to qualify for interschool teams, although the basic principles of teaching beginners are presented as well.

Principles that determine coaching techniques have been taken from the fields of physics, psychology, sociology, mental hygiene, applied physiology, and kinesiology. Empirically derived theories resulting from observations and practices of expert coaches have been added. The experimental literatures on learning available in psychology, education, and physical education have contributed to the theories presented in this book, as well as the experimental work of people directly or indirectly connected with coaching.

The writer is deeply grateful to those authors and publishing firms who have so generously permitted use of quotations from or references to their publications. Friends and colleagues in the coaching profession, and many former players, have kindly contributed to the development of the ideas. The thoughtful criticisms of the senior and graduate classes at The Pennsylvania State College, during the last five years, prompted some revisions and additions. The viewpoints of a large class of mature and experienced coaches at the University of Southern California during the summer of 1950 helped reduce some of the material to a more practical basis. The writer wishes to express his deepest appreciation for all these contributions.

J. D. L.

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Psychology
of Coaching

1

The Nature of the Coaching Profession

Excuses do not change man's love for the winner and scorn for the loser.

A sports story reports that many more people know the football coaches than the presidents of the large American universities. It was reported, also, some years ago that a large state university had to raise the president's salary to make it greater than the amount received by the new football coach. The smallest hamlet and the largest city of America boast of their respective athletic teams and athletic heroes, and the men who have the job of coaching these teams have great prestige in their respective communities when their teams are winning. When the teams are having a disastrous season, the coaches are subject to public and private criticism which stops at neither anonymous letters and telephone calls nor insults to the wives and children of the coaches. In such cases, whatever the underlying cause of the poor record, the coach is very likely to be looking for a new job before another season.

The following excerpt from an article by the wife of one of America's great football coaches illustrates a coach's problems after losing.

We beat Purdue, tied Indiana. Our 1947 season was off to a good start. Then California beat us, 48-7, and the wolves began to howl. There were two phone calls, one facetious—"Was

Harry at the game, and did he know what the score was?" and one nasty—"A fine coaching job. Why don't you quit?" Peter, aged ten, came home from church with a bloody nose. Some youngster had told him his father was a lousy coach, and that made Peter mad. "You see," he said, "I kinda like my father."¹

Placement. The experience of those in charge of placing prospective teachers indicates that ability to coach sports makes job placement much easier, and, also, that the salary scale for coaches may be somewhat higher than that of the academic teacher. Football and basketball seem to offer the most openings, though preferences differ with different sections of the country. If soccer, wrestling, gymnastics, baseball, or lacrosse are quite popular in a particular geographical section, the teacher with experience in the preferred sport may be the one chosen.

In many sections of the country beginning coaches, like other teachers, are paid a salary so low as to cause real economic stress. The prospective coach should consider the salary situation in his placement area before finally deciding upon his career. A few eminent coaches do draw high salaries, but hundreds of less fortunate coaches make only a bare living and the problem of supporting a wife and family may bring real hardships. The young man who is greatly concerned with rising rapidly to the higher income brackets would be wiser to choose another profession.

In the field of coaching, some sports pay better than others. Throughout the country, football coaching generally offers the highest salaries, with basketball perhaps second, although geographical areas may be found in which other sports rank higher in prestige than football and basketball. The prospective coach might do well to seek out the section of the country in which his preferred sport has great prestige.

Working hours. King² made a time analysis study of high school athletic coaching duties. He kept a personal diary which

¹ Mary Stuhldreher, "Football Fans Aren't Human," *The Saturday Evening Post*, October 23, 1948, page 22.

² Carl Edward King, "A Time Analysis of High School Coaching Duties" (Unpublished Master's thesis, University of Michigan, 1946).

recorded the exact time spent. His time record was compared with that of other coaches and found to agree in major duties for time allotment. The time span of the coaching duties, dealing with football, basketball, and track, extended from August 20, 1945, to May 18, 1946. The study indicated an average expenditure of time on athletic duties, alone, of approximately thirty hours per calendar week. King lists thirty-nine categories of duties. The major demands in order of time expended were: (1) practice periods, games, scouting trips, game-movie analysis, and so on; (2) public relations and promotion with students, faculty, and community; (3) state, league, and coaches' athletic organizations; (4) physical examinations, eligibility, and equipment; and (5) clerical work.

Placement of the man equipped to coach is easier, and salary perhaps a little higher, but the working hours are almost always longer. Sports coaching allows little time for other recreation or social life. The coach is likely to work more hours after school and on week ends than he spends in the formal school day. In addition to his hours of coaching, his week ends and some week nights are filled up with games. His job involves scouting, watching other teams to get new ideas, evolving and continually revising his offenses and defenses, taking his not unimportant place in a demanding community, and being constantly a friend, father, and perhaps conscience for his athletes.

Emotional tension. The press, the radio, and the general public glamorize the coach's wins if they are consistent, but may criticize his losses with a bitterness and cruelty out of all proportion to the importance of the particular defeat. The coach is under a state of emotional tension before each game. In fact, ulcers are supposed to be an occupational disease of coaching. Many men's wives say that their husbands become irritable at home as the game approaches, and are often unable to sleep or eat. The children learn to leave "the old man" alone the day of the game.

A young man's profession. Emotional tension, loss of sleep, interference with eating habits, long, tiresome hours of travel with the responsibility of a foster-parent for a group of boys who are

not all quite mature enough to be trusted to take care of themselves, and constant contact with a critical public combine to make coaching a *young man's game*. Many men use coaching as a stepping stone and income source until they secure additional training and opportunity for other occupations such as educational administration, business, or law. Through the public relations of the athletic job, many coaches become influential in the community and find the step into public school administration relatively easy. Some few who are eminently successful with their teams remain in coaching all their lives.

When the coach grows so old either in mind or in body that he no longer enjoys the trips with his boys, the foster-parent responsibility, the play and enthusiasm of youth, he should change his profession. When the coach becomes old beyond the level of enjoying the adolescent enthusiasms of his boys, when their immature chatter bores him, when he becomes critical and unsympathetic toward their opinions, their ideas, and their likings, he is no longer an effective coach. This statement seems to be a little more applicable to team games than to individual sports. He may even be *more* mature, better educated, more realistic, a greater student of humanity than he was in preceding years, but he is out of touch with youth. He will be a less successful sports teacher. He shares too few kindred feelings, emotions, joys, and objectives with his boys.

Never a dull moment. Life is never monotonous to the coach. He does not need to spend money for the vicarious thrill of the movie or the theatre. He is continually in the midst of a real action serial in which he is the chief actor and in which he is frequently in suspense until the next act of the drama unfolds. His occasional tragedies only make his successes more enjoyable. There is an emotional therapy in a defeat that is a little difficult to describe. It causes a re-evaluation of coaching procedures, and of one's self. One is reminded of the two ladies coming out of the theatre weeping copiously and expressing, between sobs, how marvelous they thought the film tragedy was. There is something of this type of sadistic pleasure in the coach's experience of expending almost superhuman efforts to get his boys ready for a contest and then

having thousands of people see his boys put on an awkward, weak and unskillful show in the face of determined opposition. However, a little of this type of catharsis goes a long way and too much of it involves a punishment that drives the coach to seek other occupation even though his tenure is secure.

This dark side of the coaching profession is presented so that the prospective coach will suffer no illusions about the profession. Few men, however, ever regret their experiences as coaches. Most value the experience above that of any other type of real-life education. The coach is constantly working with youth, with boys at the peak of their enthusiasms. The coaching life is active, vigorous, and fascinating. The coach preserves his own youth and his youthful enthusiasms in his constant intimacy with his boys. He becomes of necessity a great student of human nature. If "the proper study of mankind is man," there is no better school than the coaching "school."

SPECIAL ASPECTS OF TEACHING SPORTS

Only an elective course. The coaching of sports is a type of teaching differing in many ways from regularly scheduled and required classroom or physical education instruction. Sports are not only *elective* courses, but their election may be discouraged by highly academic faculty members or parents. Many high schools and athletic organizations limit the length of time during which the boys may pursue this course. In some sections, the boys are permitted to work at a particular sport only during the short span of three to four months per year. In many schools, the boy has to meet certain grade averages in his other courses before he is permitted to elect this "advanced skill course." The boy is watched carefully to make sure that he does not play more than his allotted years of competition. He may not be allowed to participate in games with other teams such as his Sunday School team, the Y.M.C.A. team, the boy's club team, and the like, if he is competing for the high school.

An advanced course. The athletic squad is generally conceded to be one in which those youngsters of higher skill levels take an ad-

vanced course in athletics. Although boys who have indications of great potentiality may be kept on the squad in spite of lack of skill, the coach is generally given the prerogative of dropping the less talented inferior students. The assumption is that varsity squad time should be devoted to the more promising students in the athletic skills. Physical education classes, intramurals, junior varsity teams, and the like, offer the elementary courses. The coach often has the additional responsibility of conducting these beginning courses.

These beginner's courses may be a very important part of the coach's work and, if so, must not be slighted. They involve the physical welfare of much of the total group as well as the incubation of future varsity athletes. It is usually better for the coach to try to teach the beginners separately rather than to carry them all on the varsity squad. Best teaching seems to result when groups are not too cumbersome in size or too diverse in abilities. The coach can not expect to polish the higher levels of interschool athletic ability if he must devote much of his squad practice time to the tutoring of rank beginners.

Physical examinations and parental consent. Another special requirement for the elective course, Sports, is the special physical examination to determine the boy's fitness for interschool competition. This examination is an essential prerequisite for the boy's own protection. It is also a responsibility that the school owes to the parents if it is going to subject the boys to rigorous competitive athletics. Parental consent should always be obtained before the boy is permitted to play interschool games. Most schools have printed forms which the youngsters take home for the parents to sign, thereby indicating the willingness of the parents to have their own offspring participate in interschool competition. The forms on pages 55-57 represent the two sides of a 4" by 6" card used by the schools of the Pennsylvania Interscholastic Athletic Association.

Motivation no problem. Two other aspects distinguish the sports squad from the other classes. The motivation tends to be much higher. There is little need to expend effort in arousing in-

terest in an activity which the community, the radio, the papers, and schoolmates endow with such prestige. The coach actually may have to chase the boys off the practice court at the end of formal practice. The boys are likely to spend their spare time week ends and holidays in playing some sport. Few other school subjects hold such interest.

Frequent public examinations of teaching results. The other differing aspect of this type of teaching is that of public examinations of achievement. Regular games submit the boys and the coach to public appraisal of the success of the course. No other subject is so regularly submitted to public examination of its results, public inspiration toward higher levels of achievement, and public censure for lack of achievement.

PREPARATION FOR COACHING SPORTS

Undergraduate athletic experience. Undergraduate experience on an athletic squad is almost a prerequisite for the prospective coach. Actual varsity game experience is very valuable. In no other way can one gain a complete understanding of the athlete, his problems and worries, essential sacrifices to win, and the composite of characteristics that contribute to athletic success. In addition, squad experience teaches the techniques of getting along with the boys, and exposes one to the boys' real thoughts, ideas, and feelings as they go through the gruelling preparatory grind and culminating crisis of the important school game.

Squad experience gives one not only an understanding of the offensive and defensive techniques employed by his own team but also those of his opponents. The preparation for each contest includes an appraisal of the systems of the opponents, with a valuation of their strengths and their weaknesses. The games themselves demonstrate these varying systems. Their strengths and weaknesses are much better remembered if one goes through the experience of trying to combat those strengths and exploit those weaknesses in interschool competition.

The "varsity letter" may have so much prestige in some communities that it becomes a factor in job-getting. The "letter-

man" from the small school is sometimes given preference by school boards over the squad man from the larger university who did not earn a letter. Perhaps the high school athlete should take local public attitude into account when selecting a college, if he plans to become a coach.

Educational background. The prospective coach needs, in addition to his knowledge of sports, adequate course work to give him an understanding of human physiology, growth, and development. For example, the coach is likely to be on the lookout for *big* boys. Such boys may have less energy, less vitality, and less resistance to fatigue and disease than do the boys of average size. The *big* boy may be growing too rapidly for vigorous competitive sports participation. His strength and energy may be almost entirely absorbed by the growth process. It is a common error to overestimate the vitality and endurance of the young but unusually large boy. The extra size creates the illusion of extra endurance and vitality, when the reverse is often the case. The extra size and weight may be accompanied by extra strength, but strength must not be confused with vitality, energy supply, endurance, and resistance to fatigue and disease. The coach may be right in assuming that "a good big man is better than a good little man"; but he must give the big man different treatment from that of the little man. He may kill the goose before it gets old enough to lay any golden eggs.

The coach should have some background in the field of nutrition. The members of the squad will need guidance and some individual attention in regard to their eating habits. Overweight boys may profit by a restricted diet, average boys may need supervision lest they gorge themselves, and underweight boys may need special food. Outdoor exercise and cool weather may stimulate the appetite so that the boy feels hungry even after eating more than enough. The coach should see that the amounts of food served to the boys are suited to their needs, not to their appetites. This is not an easy problem because the rapidly growing boy uses tremendous quantities of food, and the boy who is growing very slowly may eat the same quantity and thereby "eat himself off the team." The coach placed in the position of a guide to the growth and de-

velopment of boys needs something besides tradition and superstition as a background.

Because all active youngsters are bound to suffer some ills, some bruises, some cuts, and some sprains, the coach needs to know both first aid and athletic trainer fundamentals.

If the coach can acquire some ability in public speaking and a somewhat extensive education in the Arts curriculum, he will find it invaluable for his contacts with the public and his speeches at luncheon clubs, sports banquets, and P.-T.A. meetings. In addition, it will give him greater prestige among his colleagues. Errors in spelling and grammar are especially noticed by both colleagues and students. Ignorance of the common culture of educated people detracts from one's professional prestige and closes the door against many opportunities for advancement.

There is enough value in this public speaking ability to justify special training in college. The ease of manner, the spontaneity of wit, the sensing of audience reaction are gotten only by practice. The content of most public athletic speeches involves objectives and purposes of athletics, values in physical fitness, and personality acquirements. The better speeches seem to include a number of athletic anecdotes, serving to illustrate the points to be made, woven around a short outline. Anecdotes are more effective when they include examples of a particular athlete's behavior; for example, the emotional stability shown in calmly dropping in two fouls to tie up a game, or the maintaining of imperturbable behavior in spite of violent and cruel razzing by partisan spectators.

The humorous incidents of a season are well worth remembering for later speeches. One such incident served for many a banquet speech. The coach, completely exasperated at the constant and extremely foolish errors of a big, awkward boy, finally said, "Bill, if you had a brain, you would be human."

The big fellow looked at the coach and said in all seriousness, "Coach, if I had a brain, I wouldn't be playing this dumb game."

In-service education for coaching. Of course, consistent winning will cover many grammatical errors and evidences of cultural gaps. Moreover, academic scholarship will not replace competency

in coaching. Hence, the coach should never miss an opportunity to improve himself in coaching. He should attend sports clinics, coaches' conferences, and outstanding contests in his sport to keep up to date. His library should include the latest sports books and the best technical sports magazines. If possible, he should have some friends who are also coaches, and with whom he is intimate enough to exchange ideas, experiences, notes on opponents, and sport theories.

THE QUALITIES OF A GOOD COACH

A coach's philosophy. Man becomes fit for physical activity (and all life is made up of physical activity) by developing needed skills, strengths, and endurances. Man should be more fit than the daily necessities of his life require so that he can meet the occasional emergencies that arise. These emergencies may include sudden need to increase greatly his working hours to take care of some immediate situation. The situation may be a very vital and very upsetting one, such as a sudden financial crisis in the man's personal affairs, or even sickness and death of a loved one. At least once in each generation man seems to be called on to undergo the extremes of active military service. Whatever the emergency that thrusts itself on man, he is obligated, by a kind of *noblesse oblige*, to readjust and carry on. Sports are a means of developing these emergency fitnesses.

That fineness and nicety of control, which we have in mind when we speak of a graceful, poised, and well-coordinated individual, comes from years of daily experience in a selected variety of *vigorous* physical activities. As concomitants of the fitnesses from sports, and the precision and nicety of body control, the highly emotionalized sports teach a mental poise—an emotional stability that should stand the athletes in good stead in future critical situations.

The high level of physical fitness, strengths, and endurances that we consider so essential for military preparedness is extremely difficult to inspire in peace time. But schools hope to develop peace time leaders in the attainment of superb physiques, unbounding

energy, and physical power. These leaders can set an example after graduation by maintaining high levels of motor fitness well into middle age. The maintenance of this level of fitness by such men should be considered fun by them, and perhaps a patriotic responsibility. Our trained athletes will need to be our examples of vigor, for no other program is accompanied by the intense motivation essential for attaining and preserving this type of fitness.

Man has found no substitute for the urge to win in sports as a means of getting boys to strive for higher and higher levels of performance. Nothing has equalled this intense competitive urge in developing emotional control in spite of the most exciting stimuli. Nothing has approached the urge to win in sports as a means of motivating health habits, moral behavior, and physical fitness training.

Psychologists and mental hygienists have listed as basic human needs the need for self-respect, for approbation and respect from others, and the need for self-expression; in other words, a need for means of assuaging the inferiority feelings that characterize all normal people. Through the prestige of sports participation, the psychic and physical therapy of physically-active fun, and the vigorous self-expression in sports, the boy satisfies these needs. In addition, he readjusts his youthful restlessness and energy into forms of expression socially approved and personally developmental.

The development of energy sources in man seems to be greatly facilitated by the effect of large muscle exercise on the growth and development of the vital organs of the body. The stimulus of the competitive sports battles on the heart and lungs of the individual, the greater demands on the circulatory system, the increased demands on the alimentary canal, the liver, the spleen—in fact, the strong stimuli to faster tempo and more efficient performance of the entire body, including all the metabolic and electro-chemical processes—seem to leave the athlete with highly productive physiological “energy dynamos.”

There has been some tendency in academic circles to discourage this excess energy development because energy will express itself

and, if not properly directed, will express itself in mischievous ways annoying to the nervous school teacher. In fact, some schoolmen in the past have considered athletics chiefly a method of exhausting energy so that the boys would not cause disciplinary problems. The fallacy in this type of reasoning is that exercise tends to make youngsters more fit and more energetic. One instance came to the writer's attention in which the Dean of Women in a coeducational college asked the Head of the Physical Education Department to install a program of vigorous sports for women for the purpose of exhausting their excess energies and making them "less likely to chase the boys." The Department Head assured her that such a program might only increase their energies to such an extent that they would not only "chase the boys" but might even catch them.

The fact that these energetic youngsters occasionally get into mischief stems from adult failure to provide sufficient worth-while things to do. The understanding teacher or administrator of today uses these dynamic youngsters as school leaders, and hopes that many more students will develop these supplies of energy that carry over into wide ranges of accomplishment.

The old-fashioned idea that a boy is a *good boy* who is quiet, docile, and physically inactive in school has been exploded. Learning is an active process. The high grade youngster is not a docile receptacle into which the teacher pours learning. He is an active, questioning, thinking organism. Habitual physical inactivity indicates a mental or physical health problem. Docile submission does not mean cooperative endeavor; it means crushed spirits and unhealthy attitudes. The whole concept of good behavior as being *inactive behavior* militates against industry, production, progressiveness, ingenuity, and creativeness.

You have heard the expression that a boy is "not worth his salt" if he does not get into mischief now and then. This is just an old interpretation of the need for excess energy which fitness produces. The devil does not find much work for idle hands to do if the idle hands belong to a boy with very little energy. "He isn't worth his salt" even to the devil. On the other hand the boy with the energy is the boy who makes a name for himself.

An energetic personality is always colorful. . . . The industry and perseverance necessary to succeed and the will to achieve are manifestations of this energy properly directed. The sparkle of wit is a phase. The buoyancy of spirits that is supposed to characterize youth is a joyous expression of excess energy. The elusive aura of personal magnetism possessed by striking personalities is this energy suffusing their social behavior.³

Player evaluation. A good coach knows how to collect, analyze, and interpret the data for selecting and ranking his players in their potentiality for winning. There are no quick tests to administer although tests may be some help in the first crude sorting of the large squad. Tests or other measures may furnish rather objective data on some important aspect of an athlete, but what this aspect is worth as it fuses with other aspects is extremely difficult to determine. One can test speed of running in a straight line but not thereby know how that speed will be used in a game situation. One common descriptive term for inappropriate use of speed by a boy in sports is the expression, "His head can't keep up with his feet"; another, "He runs around too much without getting any place."

Strength tests are common types recommended by some "experts" as excellent measures of athletic ability. One can measure certain strengths, of course, but strength expresses itself in sports in a combination of aspects called power. Effective power depends upon many factors such as leverage, speed, and directness of force application, for example. The classification of athletes by a strength test might place a very clumsy person ahead of a very skillful person. Moreover, misdirected power is useless or even harmful to sports success. The overcharging lineman is "mouse-trapped." The wild-swinging boxer is open to counter-punching. Usually the control of balance necessary for the next act is upset by the expression of power without skill. The examples of the errors that might occur if boys were selected for sports solely on the basis of objective test scores could be multiplied indefinitely.

³ E. C. Davis and John D. Lawther, *Successful Teaching in Physical Education*, rev. ed. New York: Prentice-Hall, Inc., 1948, page 374.

The point to be remembered is that an individual is not an accumulation of traits, but a fusion of traits. So far, no physiological chemist has been able to furnish formulae as to what any specific quantities of the various traits produce when fused into the unity of human personality. No test equals that of trial performance in showing what the crucible of sports may do with the unique combination of traits in each boy.

The best evaluation method evolved to date is that of the expert coach observing his boys in sports performance and comparing them with each other in skill performance, especially as they compete against each other in basic skills, lead-up games, and squad scrimmages. The coach keeps daily records, case histories, and cumulative summaries of his boys' performances as they practice and play games. He uses floor or field charts to gather objective data of successes and errors, of percentages, of strong and weak points. And the coach continually re-evaluates his boys in terms of the additional data that accumulate as the season progresses. The stop watch, the floor chart, the rebound record, the batting percentage, and the movie film are devices used to aid in sports analysis of individuals. Objective, impartial judgment by the coach implies matching his boys against each other until adequate data are available with which to select those boys most likely to win.

Courage. The coach must be courageous enough to base his judgment on this evidence gathered, irrespective of the position of the boy in the community, or of other outside pressures. Many a coach has had to bench his captain or some socially prominent senior because the boy's ability did not justify his selection as a playing member of the team.

Personal friendships, personal likings for a particular personality, and community pressures in favor of a particular individual must be ignored if the factual data gathered favor the choice of some other boy for the playing position. This objectivity may take a little personal courage. So does benching a boy whom the coach thinks is unfit to play, from a health standpoint, when both the boy and the home crowd insist on his playing. The coach must have the courage to protect the boys from injury.

This protection may imply coach opposition to an intense schedule of very difficult and very frequent games, or games and practices that habitually keep growing youngsters out until very late at night. Five or six inches of growth in a year's time may make the use of a boy dangerous to his health. Colds, sprains, and illnesses must be given adequate treatment time in spite of the demands of the schedule and the hysteria to win. The boy must be protected from his own rash impulses whether they are to discard protective equipment, play when he is still weak from illness, or drink great quantities of cold water when he is overheated.

It is necessary at times to protect the boys from public criticism. They will make mistakes. The courageous coach will frequently conceal from the public the very errors of a boy that bring upon the coach both defeat and harsh criticism. The boy is immature, emotional, and not yet able to withstand harsh public criticism without great retardation in his learning, or serious damage to his self-confidence. It is up to the coach to keep his own council, and at all times to put educational objectives above the momentary hysteria to win.

Dignity. In general, the coach who maintains a dignified and gentlemanly behavior in spite of game crises, player blunders, or officials' decisions against his team, is the better coach. A wild emotional act is likely to upset his own boys, is contrary to the best educational teaching, is a bad example for a reputed educational leader to set the school children and the general public, and is usually less effective in gaining desired results. Such an occurrence as a wild outburst by the home coach in protest against an official's decision tends to encourage the fans to be even more vigorous in their protest. It may even lead to threats and violence. It is surely direct evidence that emotional adjustment and sociality are not even educational objectives of that particular sports teacher. Sports brawls are drastic evidences of the need for better teaching. The coach can not justify his neglect of responsibility for some adult education in his community.

In dealing with people, it is a well-known fact that dignified conferences tend to be more effective than wild vituperation. The

same dignity should persevere after a glorious win or a heartbreaking defeat.

The true sportsman. There is some misunderstanding about the nature of the true sportsman. Sportsmanship refers to *behavior*, not to the inner feelings of competitors during competition and after victory or defeat. The good sportsman has learned to control his feelings so that he can smile and congratulate the winner when he, himself, is defeated, and refuse to boast or gloat when he wins. He plays hard but fair. He is friendly to his opponents and thoroughly enjoys the challenge of real competition. In spite of zeal and high emotional pitch, he remains a gentleman. But, if he does not hate to lose, and love to win, he deserves no credit for his behavior. He is controlling no emotions. He has no emotions. He is only half a man.

Sociality. The coach more than any other teacher comes in close contact with the students and the townspeople. Much of his success is dependent on his ability to understand people and to get along well with them. Moreover, the friendship and help of his administrator and his colleagues will be needed at times. The ability to acquire such friendships is highly dependent on the sociality of the coach and his ability to see the other fellow's point of view, talk intelligently about the other person's interests, and give him a helping hand or a word of encouragement if needed. The coach should be, above all, a pleasant, cooperative, and agreeable associate.

Health and energy. The work of the coach is very vigorous. He has his regular school activities, his night work scouting other teams, directing games, analyzing sports movies in preparation for the next week game, speaking before interested sports groups, and the like. In addition there is the daily practice at which he must be a *leader* and *example* of enthusiasm and energy. Many times it will be advantageous for teaching purposes if the coach can play with, or against, the boys. Frequently he will need to demonstrate both correct techniques for player imitation, and offensive or defensive styles that opponents will use against his boys. The need

by the coach of good health and great supplies of energy is apparent.

Knowledge and skill. The coach must know his sport in all its details. He must know plays and formations until it is almost impossible for an opponent to confuse him with an unknown attack or defense. He must know the styles of the great stars, and the forms most easily adopted by the average boy. The coach should have enough skill in performance of the sport so that he can step in at any teaching moment to demonstrate a troublesome movement-pattern. He should be able to imitate in performance, for demonstration purposes, the particular style and action of an opponent for whom the squad is preparing. If the coach can imitate in practice the maneuvers of the opponents, and thereby prepare his boys for exactly what they shall meet, he has gone a long way toward winning.

Coach demonstrations are usually slow-motion performances to clarify a difficult part of a movement-pattern. The implication is not that the older coach should scrimmage against his boys in football, box several rounds with them, or race them a mile. The coach demonstrates what parts or bits he can perform better than the boys, in order to show the boys how to improve. If the coach is an exceptional performer, he may find it valuable to play for short periods against his boys to bring out a weakness of theirs and to offer them practice in correcting it; for example, continual pounding of a backhand of a tennis player who needs such drill, dribbling around an over-charging basketball guard, pitching certain types of balls to the baseball boys for polish of a batting weakness, and the like.

Sometimes the young coach in the small high school finds it necessary to scrimmage with the second team against his varsity in order to furnish enough opposition for real practice. Of course, if the coach is not at all adept at the sport, such participation may do more harm than good. It would seem that the unskilled coach should practice, away from his varsity, until he acquires the skills, or at least enough of the skills to play, when necessary, in the non-

contact sports. There is no experimental evidence to indicate that a normal healthy man can not acquire new sport skills long after his college days are over. Most coaches can become adept at the sport they are coaching within two or three seasons.

Imagination and experience. Creative imagination is putting together bits of former experience in new arrangements. New plays, new techniques, and new strategy are these creations of the coach out of his background of experience and his hunches about effective procedures. The good coach is constructively imaginative in his sport. At lunch, he draws new ideas on the paper napkins, or rearranges the salt cellars, cups, glasses, and sugar bowl into improvised team formations. He keeps a pad and pencil beside his bed at night to record flashes of ideas that come to him after retiring—flashes that might be forgotten if left unrecorded until morning. He sees each new play, formation, or technique first in terms of what it is worth as it is performed, and then in terms of what modification might be made to improve it; or he sees a bit of it which could be abstracted and added to his own procedures.

The point that the beginning coach often misses is that creative imagination is non-productive without lots of experiences from which to take the bits and pieces. One must be on the lookout constantly for new ideas—ideas that can be revised, dissected, synthesized with others to form the coach's new creation. The clinics attended, the conversations with other coaches, the games one sees, the technical sports books and magazines one reads, are filling up this mental storehouse of the coach with the raw materials for his *new* ideas. He fills his mind and then lets the ideas incubate.

In hunting new ideas, the coach should not overlook the basic techniques, plays, and strategy of preceding years of the sport. The "T" formation in football which has become so famous in recent years was the original formation in the game. The fake-kick with the wing-back taking a backward pass and swinging wide on an end sweep is just a modification of the ancient "Statue of Liberty" play of generations ago. Knute Rockne and Gus

Dorias made the forward pass famous while they were playing in college.

University staffs often keep old files of game data, plays, strategy, and techniques extending back for more than a generation. One exceptionally successful staff had a phrase to describe their successes with new ideas that seemed to crop up now and then with their teams. They said, "Oh, we just took another one down off the shelf." With a little readjustment, many of the old ideas turn into very useful modern creations.

The demand for winning. Regardless of one's philosophy concerning the relative educational value of wins and losses, socially cooperative play, or the doctrine that someone has advocated that "the ideal outcome of all games is a tie," the coach must win frequently to stay in the coaching profession. The wife of one famous coach calls attention to the importance attached to winning. She writes:

One of my children was born on the morning of the day our team played for the Conference Championship. I spent hours crying because everyone I knew went to the game and left me almost alone. Not until my nurse came in laughing and puzzled could I see any humor in the situation. My friends who were calling the hospital were not asking, "Is it a girl or a boy?", but, "Who won the game?" I told this story to my young son the other day, and he asked, "Did we win, Mother?" The little word, win, is the most important one in the coach's household.⁴

The coach's wife is so important a part of his career that some school authorities consider her personality in judging her husband's qualifications. A great coach's wife is a woman who understands the demands of her husband's job well enough to forego the social life that others enjoy; who does everything from entertaining demanding and critical alumni to charting a ball game; who endures without protest her husband's almost constant absences from home for practices and ball games, late scouting trips, and other meetings; and who quiets the children and endures without outward rebellion

⁴ Janet Hutton, "Mrs. Coach," *The Bulletin of the National Association of Basketball Coaches of the United States*. January, 1950. Page 4.

her husband's black moods after defeat. Such a life is not easy but many of the great coaches of the country are lucky enough to have such "assistants."

Wins and losses, and coach attitude. Perhaps a proper attitude of the coach would be to consider winning, when relatively equal teams are matched, as the best measure of: (1) skill learning, (2) determined effort, (3) performance under duress, and (4) physical condition. The won-and-lost scale will be the measuring stick applied to the coach, no matter what his private opinion as to its validity or lack of validity as a measure of the educational achievement of his boys. In contradiction to the old maxims, it seems to be "whether you win or lose" as well as "how you play the game." The coach who takes his defeats complacently has missed his calling.

A sense of humor. To remain a sociable, balanced human in this world of sports one needs a sense of humor. This type of intelligence, of being able to see the real significance of daily happenings, should contribute a great deal toward a stable, reasonably happy life in the coaching profession. A sense of humor means the ability to see the inconsistencies, contradictions, and blunders in play and life, and to divert one's reaction to them into a kind of joyous emotion. When this joyous emotion is allowed to burst forth into sound, we call it laughter. Whatever it is, it refreshes one, makes him forget his troubles, properly evaluate his losses, and face life with new courage.

Discussion Questions

1. What are the tenure laws for secondary school coaches in your state?
2. Based on the practices in your state, what salary might you reasonably expect in your first year of coaching?
3. Should college or high school football coaches receive higher salaries than the academic teaching faculty?
4. Should a system of tenure be set up for high salaried athletic coaches?
5. What is the psychological basis for the *severity* of the criticism aimed at the losing coach?
6. Do you have in mind any future occupation which you may take up if you stop coaching?

7. What should the retirement age of a coach be?
8. Should the average coach plan to cease active coaching by the age of fifty years?
9. As a coach, do you expect to permit your squad members to play on other teams besides their own school teams during the season? Out of season?
10. Does educational method indicate that most teachers should associate with the students in supervision of some form of extracurricular activity?
11. Is it justifiable to keep a boy off the athletic squad because he can not pass high school English?
12. How long does the preliminary medical examination, and medical certificate to play, guarantee the boy's fitness?
13. Have there been great coaches who were not varsity men in college? What percentage of the great coaches that you can name did not have varsity or professional experience?
14. Can the undergraduate be trained to coach a sport by physical education "theory of coaching" courses even though he has no actual competitive varsity experience?
15. Are sports a good means for the school boy to attain prestige among his schoolmates?
16. How serious to the coach is a lack of cultural education?
17. Why do some states demand, for coaching certification, background courses in anatomy, physiology, health, and first aid?
18. What is the characteristic content (topics covered) of the banquet speeches of athletic coaches?
19. What are some of the special problems of a coach's wife, due to the nature of his profession?
20. Do you expect to return to the campus for an occasional week end after you start coaching?
21. How does the experienced coach get new ideas in sports?
22. Was the infantry soldier any better for having been an athlete before joining the army? The air corps pilot before joining the air corps? The sailor before joining the navy?
23. Are there values in interschool athletics not found in intramural athletics?
24. Is there any educational justification for interscholastic sports for girls?
25. If there are interscholastic teams for girls, should they be organized, administered, and coached only by women?

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26. Is the prerogative of the athletic coach to drop his "poor students" early in the course a sound educational policy?
27. Does a varsity letter from a small college have as much value for job getting as squad experience but no letter at a large college?
28. Can sports be justified as a form of military preparedness?
29. Does winning, in itself, have any educational value?
30. Why do the coaches not use, to a greater extent, Strength, Physical Fitness, Motor Capacity, and Motor Ability Tests devised in the Field of Physical Education?
31. What tests do you recommend as an aid to the selection of athletes in a specific sport?
32. What aspects of the case study technique are employed by the coach?
33. What should the coach's reaction be when the students set up the chant, "We want _____ (so and so) _____," during the game—an attempt to influence the coach's substitution procedures?
34. Should the coach take time to listen to the advice of townspeople and alumni?
35. Does the experienced coach get so he can take a defeat without much personal emotional disturbance?
36. What should the coach do if he feels that the officials are not giving his boys a square deal?
37. Should the coach avoid the fans and the townspeople for a few days after losing a game?
38. Should the coach, himself, observe the training rules and health habits that he expects the boys to follow?
39. Does "a good sportsman" hate to lose?
40. To what extent should the coach attempt to demonstrate procedures for his boys?

Test Questions

1. In general, should the coach permit his boys to play on outside teams during the season?
2. Does the coach have as much security of tenure, generally speaking, as the academic teacher?
3. Does educational method indicate that most teachers should associate with the students in supervision of some sort of extracurricular activity?
4. Is it justifiable, as a principle, to keep a boy off the athletic squad because he lacks the ability to pass secondary school English?

5. Does the preliminary medical examination guarantee the boy's fitness for the year?
6. Have there been great coaches who were not varsity men in college?
7. In general, is the boy without varsity experience greatly handicapped in trying to coach?
8. Are athletic sports (assuming success) a good means for the school boy to attain prestige among his schoolmates?
9. Do high school star athletes tend to "burn themselves out" before their college years?
10. Do you expect to be free to return to your old college campus for occasional week ends after you start coaching?
11. Is there any scientific evidence that proves the athlete to make the best soldier?
12. Are there values in interschool athletics not found in intramural athletics?
13. Did woman's participation in the war effort indicate that she is not constitutionally fit for interschool athletics?
14. Do the tennis authorities advocate that women should practice against men in preparation for the international matches?
15. Should the coaches select their teams by use of standardized tests?
16. Should the coach take time to listen to the advice of townspeople and alumni?
17. Does the experienced coach become able to take defeat without much personal disturbance?
18. Should the coach avoid the fans and townspeople for a few days after losing a game?
19. Should the coach, himself, observe the training rules and health habits that he expects his athletes to follow?
20. Does a "good sportsman" hate to lose?

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2

Problems Related to Assistants, Facilities, and Equipment

A shoe lace is a major matter.

The work of the coach is greatly facilitated, and the learning by the players is tremendously accelerated, by a pleasant and cheerful environment before and after practice as well as on the field or court. Many times the rooms needed for dressing, for bathing, for injury treatment, and for equipment storage are partially under the administration of the coach. If the coach can participate in their planning, he may be able to arrange the facilities so that they suggest and invite enthusiastic athletic participation.

The locker room. If at all possible the varsity locker rooms should be distinct and separated from the locker rooms used by the rest of the student body. It is even more satisfactory if the squads playing different sports during the same season can be kept separated. Each sport squad has its own problems, its own training regimens, and its own interests.

The locker room should be well lighted and well ventilated. In addition to adequate artificial lights, the lockers should be arranged to take full advantage of all available daylight. When several rows of lockers are placed in one room because of inadequate space, the rows might well be placed at right angles to the walls containing windows, to allow the light to reach all lockers. If there are windows on two opposite walls, and space permits, two rows of lockers

may be placed back to back in the middle of the room so that each faces one set of windows. Conditions seldom are ideal but the coach may be able to rearrange his locker room so that he takes greater advantage of the existing conditions. It sometimes may be possible to improve the artificial lighting without much added expense. A dark, gloomy dressing room is highly undesirable and should be improved if at all possible.

Full-length lockers are strongly recommended. With full-length lockers, the boys can take better care of their clothes, both those for sportswear and those for street dress. Sufficient equipment should be available so that clothes will not need to be draped over benches or piled on the floor. A special rack may be necessary for overcoats in the winter. If the boys' possessions can not be locked up, some arrangement should be made so that the clothes and valuables are safe from theft while the boys are busy playing or practicing. Many boys can ill afford to lose clothes, or even small amounts of money. Worry and suspicion may disturb the squad if occasional thefts occur. A little preliminary planning with regard to this problem may prevent serious damage to squad morale.

The locker room floor should be flushed regularly with some germicide, and the walls, lockers, benches, and furniture gone over with a cloth or mop dampened with the same germicide. Each locker should be cleaned and sponged with a disinfectant before it is assigned to a new boy. This germicide should be used equally conscientiously in the training room and the shower room. Skin fungi are likely to spread unless such precautions are taken.

A large bulletin board is an advantage in a varsity locker room. It is needed for notices, for game charts and comments, for scouting data, for write-ups and pictures of prospective opponents, for weight charts, and the like. The coach will want to watch weight charts to check the accuracy of the boys' recordings, and to check the fluctuations in their weights.

The beginning coach will need to be a little cautious in his interpretation of weight charts. Norms on height-weight scales, such as appear on furnished charts or in published statistics, are only

averages. They are not necessarily weights that are desirable for each individual. A study of the individual boy that considers the amount of "meat on his ribs," his waist line, and the size of his structural framework, will give a better basis than height-weight norms for judgment of that boy's "best weight." "Best weight" seems to be an individual matter. Football coaches are well acquainted with one extreme type of individual—the one who seems (and probably is) healthiest and most efficient physically when he looks many pounds overweight. The All-America football selections often contain examples of men with what would seem to the casual observer to be an undesirable amount of adipose tissue.

Locker room supervision. The locker room is not just a dressing room in sports. It is an important part of the teaching situation. If possible, the coach should have his locker in the dressing room with the boys. He will then have his eye on things at all times. In the dressing room he will learn things about his boys that he should know and that will help him immeasurably in coaching. The dressing room is a great place to teach by informal remarks, example, and radiation of desirable attitudes. The coach must remain the coach, however. He must never reduce the social distance between himself and the boys so that they consider him "one of the boys." It is much more important to the coach that he be respected than liked.

The coach who hesitates about "putting the finger" on the boys when they need it is neither respected nor liked. All boys are not good boys, and much firm control (though kindly in the sense of consideration of the boy's own welfare and his possible rate of learning) may be necessary, especially in the locker room. The strength, vigor, and excess energy of the athlete do not express themselves in conduct à la Emily Post. Sex and profanity are likely to have a large place in unsupervised dressing room conversation and singing. Horse play may vary from wrestling, throwing cold water, or stinging bare torsos with the snapped end of a towel, to soaking a squad member's supporter with hot liniment or stealing his equipment. The energy displayed is not undesirable; it is just misdirected.

The shower room. When the shower room adjoins the locker room, precautions must be taken to keep soap and water from being carried into, and spilled on, the locker room floor. Damp, soapy floors may cause falls and serious injuries. Soap and soap containers should be available in the shower room if some form of liquid-soap system has not been installed. Occasionally a boy will want to bring a shampoo bottle into the shower. No bottles should be permitted in the shower room because they may become slippery, fall, and break. Bits of glass on the floor are difficult to find and may inflict serious foot injuries.

The shower room floor should be rough enough to prevent slipping. It should have good drainage. In some places so-called "duckboards" are placed on the floor of the shower to compensate for lack of adequate drainage. This extra platform of wooden slats tends to become slippery, is less comfortable on the bare feet, and holds moisture and dirt. Any such makeshift contraption should be removed as soon as possible, for sanitary reasons, and the floor reshaped so that drainage is adequate.

The shower room is a very important room for the athlete. A good shower in company with other squad members is a pleasure and a needed form of emotional therapy. The warmth eases the tired and sore muscles. It relaxes both muscular and nervous tensions and removes irritations. The frequent singing in the shower is an indication of resulting therapeutic value.

A story is told of a famous football coach of twenty years ago. He hired a highly academic psychologist "of the old school" to observe the football practices and to suggest ways of hastening the learning of the boys. Apparently the psychologist was entirely without athletic experience. He observed the boys for a week, then recommended that the showers be given before the practices. He said the boys were happy and joyous after the shower experience and, therefore, the shower should precede the practice to get the boys in the right mood for learning.

Proper bathing even may become difficult to encourage if the shower rooms are unattractive and cold, or if the temperature of the boy's shower changes with every additional showerhead turned

on. Perhaps the most commonly neglected equipment of this important room is the showerhead. In some gymnasiums the boys find it impossible to obtain a satisfactory spray of water from any of the showerheads. A little regulation and cleaning of these water outlets may add much to the satisfaction of this post-practice therapy.

The training room. A separate training room adjoining the dressing room is the most satisfactory arrangement for the care of the boys. When such arrangement is impossible, the trainer may improvise a room from a section of the main dressing room. Lockers and screens may be arranged so as to shut off a section of a larger room. The trainer needs his own domain as a means of protecting his work from the interference of loafers, from interruptions of other types which occur in a room area used for dressing purposes, and from interference with his arrangement and use of special equipment and supplies.

Trainer's equipment. Basic equipment items for the trainer will be listed to give the beginning coach a start on his planning. No attempt will be made to name details for every occasion but the most commonly used items appear. It is suggested that the coach who is trying to set up training room facilities for his squads consult the local medical men, trainer supply houses, and recent books on athletic injury treatment.

Sports teams experience sprains, bruises, cuts, abrasions, and burns. Injured toes, arch trouble, blisters, bruised heels, stretched tendons, "shin splints," wrenched knees, Charley horses, bruised or cracked ribs, dislocated or broken fingers, cuts above the eye, and "strawberries" are common sports difficulties. There will be skin itches, athlete's foot, impetigo, boils, and infections. Infections, like broken bones or fever, are problems for the immediate attention of the physician. The physician will give valuable aid to the coach in making up his stock of antiseptics and germicides, healing powders and salves for his training room and medical kit. Other basic equipment and supplies will be listed below.

The dimensions suggested for the training room tables are: 31 inches high, 24 inches wide, and 78 inches long. The tables should

have rubber pads covering their complete length. The training room should have a sink with hot and cold running water, a medical cabinet, lockers, a telephone, chairs, a record book, a waste can, and a wash basin. Stretchers, crutches, splints, and blankets should be immediately available. Heat lamps, chemical heat pads, electric heat pads, and hot towels are the cheaper ways to obtain heat. Arrangements should be made so that ice is immediately available.

The large training room will have electrical machines for heat treatments. These machines are too expensive for many small school budgets, and usually require either specially trained operators or the guidance of a trained physician during their use. All athletic squads should have an arrangement with a licensed physician for quick services in emergencies.

Other supplies include:

Tape—white, and black friction.

Bandages—sterile, Ace, rubber, triangular; knee elastics.

Cotton, gauze, sponge rubber, foam rubber, felt, sponges.

Ankle wraps (8 ft. long), tourniquet, ice bag.

Foot and leg rest (to hold foot or leg above table for treatment); scales if not already in locker room.

Scissors, bandage and straight; nail clippers, tweezers.

Hair clippers, bandage rolling machine.

Small brushes for painting skin; medicine dropper.

Applicators, tongue depressors, small glass and spoon.

Atomizer, eye cup and eye wash, eye syringe.

Paper drinking cups, soap, Vaseline Petroleum Jelly, collodion.

Eye lamp-black, powdered rosin, tincture of benzoin.

Tape remover, goose grease, shoe laces.

Germicides, aromatic spirits of ammonia, smelling salts.

Essence of peppermint, aspirin tablets, good throat gargle.

Epsom salts, alcohol.

Add to the above list those medical materials to treat cuts, abrasions, burns, blisters, itches, skin fungi and the like.

The stock room. The stock room should be large enough to permit orderly arrangement of the equipment and large enough for the man in charge to work comfortably. It should be equipped

with a file for records, a work bench, tools, devices for repairing and marking equipment, and sufficient furniture. It should be well lighted and ventilated. Arrangements should be made so that equipment can be handed out through a window or the upper part of a two-part door. Students should not have access to the stock room.

Practice areas. The outdoor athletic areas should be as near to the school as possible. A turf surface is best for most sports. Even in baseball a smoothly mown infield with bare base paths is better than a completely bare diamond. A basic requirement for most sports is a reasonably level field, free of stones and other hazards, with adequate drainage. Water should be available for frequent spraying to keep the ground relatively soft and to help preserve the turf if the surface is sod. The spraying of a bare dirt surface is necessary to keep down the dust. If possible, rough contact games should be avoided on hard, bare earth surfaces. The danger of injury is too great. A base of crushed stone covered with loam and rolled cinders seems to make a good outdoor track surface.

For indoor courts, narrow hardwood boards, tongued and grooved, laid over a skeleton sub-floor of two-by-fours is suggested. The sub-floor should rest on a concrete base with a layer of sound-and-shock-absorbing material between the concrete and the sub-floor.

It is advantageous to have sports practice areas that permit privacy of practice when desired. Boys may concentrate better on learning without spectators and friends watching them. The coach will be able to point out and correct errors without causing the boy to be embarrassed by having outsiders hear his mistakes being analyzed. The addition of a spectator audience may turn the same helpful and desired guidance into a form of criticism unpleasant and resented in the mind of the boy. There are, also, occasional practices of new plays or strategy that the squad desires to keep secret from the opponents.

Indoor courts present a difficult problem in cleanliness and safety, particularly when the floor is used for many other activities each

day. Each activity has its own equipment that must be moved on and off the floor. Dust and dirt are bound to accumulate in the process. Each squad contributes its portion of dust and dirt. The first job of each sports manager, or the coach if the manager is inefficient, is to clean his floor and prepare his sports equipment. In basketball, for example, paper, cigarette butts, dirt, or water on the floor may cause a sprained ankle or a bad fall. The pieces of equipment from the preceding activities must be moved to such a position that they do not create hazards for the rapidly moving boy. Bleachers, benches, tables, parallel bars, horses, suspended ropes and rings, and floor mats are some of the sports equipment that may crowd the area. All dangerous obstacles should be padded, including the basket support framework if it comes down near the floor, any close walls or pillars, and the like. Rubber mats on slippery or hazardous spots, such as stairways for example, may prevent accidents. The coach should survey his whole domain and save trouble by preventive measures. Each sport has its own type of movements and its own peculiar dangers.

When a floor is used for dancing as well as sports, some form of powder that is easy to wash off should be used in place of wax. Corn meal is frequently used. Williams and Brownell¹ suggest boric acid powder as an excellent substitute for wax inasmuch as it serves the purpose for dancing, dissolves readily when the floor is scrubbed, and acts as a disinfectant.

Movies of indoor contests. It is becoming more and more common to take movies of indoor sports events. The action pictures furnish means of analyzing errors and creating interest by later showings. With the increase in the taking of film records of night contests has come a demand for better lighting of the playing areas. Although good indoor night movies have been taken with special film at lower light intensities, the present recommendations are for at least twenty-five foot candles of light at the four foot level.

The problem in smaller gymnasiums is to find a place for the photographer distant enough from the floor. The camera man

¹ J. F. Williams and C. L. Brownell, *The Administration of Health and Physical Education*, 3rd. ed. Philadelphia: W. B. Saunders Company, 1946. Page 262.

needs to take pictures of basketball, for example, from about 100 feet. He must be far enough away so that one-third to one-half of the court appears in the camera vision area. The best angle from the floor is about 45° .

If the candle power is only ten or twelve, fairly satisfactory pictures can be taken with film of an emulsion speed of 100. The developers should be instructed to brighten the film by underexposure. A telephoto lens of 40 mm. has proved satisfactory for this type of picture.

ASSISTANTS

The men who help the coach with the numerous details directly related to his job can be a highly stimulating part of the practice environment.

The janitor. The coach who maintains friendly relations with the janitor will find the friendship well repaid. The janitor will often take charge of the lights and showers, look after the visiting officials, arrange the floor for indoor meets, give the playing floor a last-minute sweeping before the ball game, and stay late in emergencies when practices or team trips are delayed. The extra work that the athletes cause the janitor in rainy weather, with water and mud carried in on their uniforms and shoes, is no small item. This extra assistant to the coach should receive special consideration for the extra work he does. Much of it can not be paid for in money. A few words of commendation for such service, passed on to the superintendent of buildings and grounds, may result in some monetary award. A little shared interest in the ball clubs, a complimentary ticket now and then for his wife or family, and a word of appreciation for good work, may be the coach's chief contribution to this efficient helper.

Assistant coaches. There are certain limiting factors that may make it impossible to select an assistant coach, or assistant coaches, who possess all the desired qualities. In the secondary school, state certification is required in the subjects that the assistant is expected to teach. Higher administrators, alumni, or business groups may make it necessary to select a certain individual even though he

lacks some of the desired skill or knowledge of sports. In this latter case, the head coach must try to train his helpers on the job.

Many coaches prefer an assistant who is better trained in some aspect of the sport than the head coach; for example, the coach with football playing experience in the backfield usually wants an experienced lineman as assistant. Where a large staff is possible, there may be end coaches, guard and tackle coaches, or an assistant backfield coach in the "T" formation assigned to the quarterbacks. In basketball, a head coach whose playing experience stressed offense (as a forward) generally wants as an assistant a man whose playing experience emphasized guarding and rebounding. A track coach who was a dash man may pick a distance man, hurdler, or weight man as his assistant. In college, assistant coaches may be picked because of their excellency in scouting, because of their ability to judge potentially good athletic material for enrollment in the college, or because of their ability to "sell the school" to high school athletic stars.

When it is possible, the head coach should pick as his assistant a man who has had experience in varsity competition. The assistant should be a man who gets along well with the boys, is a real student of the game, and is really concerned about winning. If possible he should rapidly become a personal friend of the head coach instead of a rival who hopes soon to take over the head coach's job.

If the head coach expects the friendship and help of his assistant, he must deserve it. He must see that the assistant gets credit whenever possible, receives all possible pay raises, and is given recommendations for better jobs when such jobs are open. The head coach should train his assistant to assume full responsibility as head coach when it is necessary for the head coach to be away scouting, attending meetings, and the like.

The head coach should encourage complete frankness of expression of judgment by his assistant. The coach who fails to take advantage of this type of criticism is losing much of the value of having an assistant. The assistant may spot weaknesses that the head coach has overlooked in his over-all planning. Having only a "yes-man" as an assistant is quite a handicap, although, when it

occurs, it is usually a self-imposed handicap caused by a coach who feels that he must be the master genius at all times. The head coach should encourage an expression of difference of opinion by his assistant (in private, of course), should examine the assistant's ideas on the field or court experimentally, should gather further objective data, and should give the assistant full credit when he is right. It is much better to spot weaknesses and correct them on the practice field before the opponents have the opportunity to exploit those very weaknesses in front of the general public.

It is a good practice for the head coach to point out his own errors, in planning and handling a game, to his assistant, and tell the assistant to warn him (the head coach) if he begins to make the same error again. The problem of which substitutes are ready to be moved up for varsity use, or which of two players should be taken on a trip, are types of judgments that the assistant, if he has been handling the second or third team, should be able to make better than the head coach.

Giving the assistant these judgment responsibilities builds his needed confidence, preserves a better morale in the coaching staff, and furnishes valuable supplements to the head coach's knowledge. The assistant who was a varsity specialist in a particular position or event can generally select boys for that position or event even better than the head coach. A conference of coaches should follow every practice. Two heads are better than one if you do not pick a cabbage head for the second, and four eyes can see more than two.

The stock room man, the trainer, and the managers can all be very helpful. Managerial duties, trainer duties, and stock room man duties will be outlined in brief because: (1) the beginning coach may find that his job in the smaller high school includes the duties of all, (2) the beginning coach may be an assistant coach whose duties ordinarily include those handled by the trainer and stock room man in the larger school, or (3) the coach in a new job may find that he will need to train his helpers in order to improve their efficiency.

The trainer. It is well understood that many a beginning coach

in the small high school will be his own trainer, and that many of the ideas presented here are ideal and impossible to attain in each situation. The material is presented as an ideal to strive toward, as a guide to the assistant coach or faculty man who takes over the job of trainer as a part of his extracurricular responsibility, and as suggestive material for the coach who undertakes to train someone else to be his trainer.

The ideal trainer is a "trouble shooter" for the squad. He is an efficiency expert in mental and physical condition. He strives continually to keep the entire squad fit to win. He must take trouble as a matter of course. If there were no problems, there would be no need for trainers. The trainer's problems may include sickness, ineligibility, injuries, and mental states; in short, anything that interferes with the functional efficiency of the squad. He can not predict beforehand what particular types of squad handicaps he will be called on to remove. He can have no set procedure. He may need to treat blisters, or homesickness, sprains or fatigue, Charley horses or "blues." Injuries vary with the season and with the sport; for example, the cartilage injury in the knee is common to football but extremely rare in track, the "shin splints" of track are uncommon in football, and the feet seem to take most of the trainer's time in basketball.

Need for prevention techniques. Of course, the most intelligent approach is prevention. The trainer's best work—prevention—is never known because no trouble develops. A conscientious coach, or trainer, can do much by equipment suggestion, by detecting the mild beginnings of injury, by noting signs of overfatigue, and by knowing the idiosyncrasies and needs of each boy.

The hard-working athlete needs to be protected from chill whether it be from cold air or cold water. Athletes, particularly in winter sports, tend to catch colds. It must be remembered that athletes trained fine for their best performances are less resistant to germs and other types of body ills. After the gruelling contest, the tired body is in no shape to resist exposure. A rapid change in temperature from the playing court and the hot shower

to below-freezing weather outdoors shocks the system. The young athletes tend to be in too much of a hurry. They may go out after practice or a game into the coldest weather before they have stopped perspiring, perhaps even with wet hair from the shower; and the college boy more often than not goes bareheaded. It is a real problem to train young athletes to take the particular care of themselves necessary during the cold, stormy winter season.

The entire staff connected with the handling and coaching of the athletes must know their own limits. Sickness, broken bones, fever, and infections are problems for the physician. The staff may render first aid until the physician arrives, if advisable, but it should be an absolute rule that no staff member ever attempt to assume any of the duties of the physician. There are plenty of responsibilities that the coach and his assistants, including the trainer, can assume; for example, the alimentary canal of the hungry youngster needs supervision and protection from immature judgment. Cuts, bruises, blisters, sprains, and the like, unless they are of a very serious nature are usually handled by the trainer, or by the coach who finds himself without the aid of a specialized trainer.

There is much knowledge of this type available in books on athletic training. College trainers are usually glad to give advice and help to the beginning coach. It is now a common practice at physical education schools to require courses in first aid and athletic training and conditioning.

A few general rules for the trainer will be listed below as a guide to the coach who must do his own trainer work, the faculty man who takes over the training job to help out the coaches, or the coach who does not understand exactly the place of a trainer in an athletic coaching organization.

General Rules for the Trainer

1. Know what to do. Don't bluff. Bluffing means wrong treatment, does not fool the boys in the long run, and substitutes wrong procedure for study of the situation.

2. Practice the needed skills such as taping, bandaging, and the like, until you are adept at them. Do your practicing on an uninjured person.

3. Be cool and emotionally controlled in emergencies. Concentrate on your job, not on the score even if the game is in the extra period.

4. Keep on the look-out for ideas. One never gets enough knowledge. Observe other squads and other trainers, and skim all new publications in the field.

5. Do not air your problems to the public. Never talk "out of school." Never say anything you would not care to have repeated. At times *your best judgment* may be *to conceal your best judgment*.

6. Keep brief records of type of injury, treatment, and dates of treatment. These records protect you in case of question, protect the school from being charged for injuries incurred away from the sport and school, and furnish you with invaluable material for later study of treatment results, needed changes in techniques, and improvement of service.

7. Listen to and weigh the advice of the coach. However, you must furnish your own solution. You were hired because you know your particular field. Results are what count. Do whatever you think will most rapidly bring the patient back into shape to compete.

8. Remember that you are a trainer, not a coach. Plays, strategy, execution of skills in competition are the coach's problems. Your job is to keep the boys ready to play. You should be able to contribute to squad morale and squad unity by occasional informal remarks as you treat a boy. Criticism of coaching and team play is analogous to spraining an ankle or causing a Charley horse in the sense that each causes a lowering of squad efficiency.

9. Spend money wisely but do not do inferior work to hold down expense. Know what you should pay for supplies when you have the responsibility for buying. If you do not do the actual buying, offer suggestions as to costs only when suggestions are

expected or appreciated, but specify exactly what you need in order to give the squads the best service. If the administration decides that you shall use a substitute product, explain the difference—but cooperate. Don't try to reform the institution for which you are working. That is the administrator's job.

10. Learn to economize time, to "make time." The boys must be ready when the time to compete arrives. If they need extra treatment, get them there ahead of time and have them ready. Check over your supplies ahead of time and arrange them for efficiency and speed of work. If necessary, train a student helper.

11. The injured competitor is a patient. Keep him lying down until you know what is wrong with him. This last statement implies that the patient shall be moved only by standard method of transfer to a stretcher, and that horizontal transportation is used when any doubt as to the nature of the injury exists. A physician should be summoned if there is any suspicion of more than superficial injury.

12. Confine your disciplining of boys to the responsibilities of your job. The training room is your domain, not the athletic field or the pool hall. The head coach is the only one who has "bullets in his gun" when it comes to squad discipline. If the head coach wants your suggestions as to discipline, he will let you know, directly or indirectly. However, squad discipline is the coach's job.

13. Keep the boy who has the symptoms of a cold (running nose, sore throat, hoarseness, temperature above normal) or any of the air passage ills, away from the rest of the squad lest he contaminate them. He needs *rest* to speed recovery, not *practice*. It is generally best to put him to bed under medical supervision.

14. Strongly recommend to the coach that no athlete be played when he is at all sick, or is still weak from a sickness. You may be in a better position to know the boy's condition than the head coach, and the coach usually appreciates such suggestions. Playing the boy when he is not completely well may postpone complete recovery, or make the individual sick again. Even more serious

is the danger to the boy's heart or some other vital organ. The person who is too tough, too busy, or too important to rest and recuperate is not *hardy*. He is *foolhardy*.

15. Be objective in your manner and expression when examining and treating a boy. Even though the injury may be slight or even nonexistent, the fact that the boy wants the trainer to fuss over him is a symptom of some need. The need may be only that of a word of encouragement and reassurance. Do not laugh at or belittle a boy. On the other hand, remain as cool and calm as ever when you fear a serious injury. Do not frighten the patient.

The stock room man. Many schools make the mistake of assuming that any man willing to do the job will be satisfactory for a stock room man. This is a serious error. The stock room man can be invaluable to the coach, and indirectly to the school, if he is a high-type individual. He must be willing to work hard and he must be interested in his work. He must be able to get along with boys, to demand and get correct behavior from them, when necessary, without causing irritation in the squad. He can become an authority on the phases of equipment that have to do with: (1) efficiency and comfort for the boys, (2) wearing qualities of materials used, (3) appearance of the squad, (4) cleaning and laundry of sports equipment, (5) moth prevention, and (6) road trip needs. He can become an authority on such items as holding colors fast, preventing shrinking, dealing with salesmen, getting what the squad needs and what is paid for, fitting the boys exactly, *ad infinitum*. Such a stock room man must be carefully selected and adequately paid.

A man who likes sports, enjoys working with athletes, and has good common sense is the type wanted. A college degree is no particular advantage and may even be a handicap in that it makes him dissatisfied with the job. Conscientiousness, a love of sports, a willingness to work hard even at dirty jobs, and a better than average modicum of intelligence are the traits needed. If possible this man should be taken on athletic trips occasionally. He will be very helpful in supervising equipment but, more impor-

tant, he learns about sports at the "ringside." He gets into the spirit of the thing.

Additional money paid to secure the type of stock room man described above does more to add to the win column than any other equal amount of money expended.

General Rules for the Stock Room Man

1. Do not buy from one concern only. Competition improves service.

2. Keep players out of the stock room.

3. Have a form card that the boy signs for his equipment.

4. Keep records of all equipment (1) ordered, (2) received, (3) issued.

5. Keep records of prices contracted.

6. Size up the boy's build and make sure that his equipment fits; for example, long waists, long legs, oversize thighs, uneven size feet, and the like are common among athletes and should be taken into account when outfitting the boy. A nearby tailor will be needed at times.

7. Mark equipment at once, when issued, with the player's name or number so that each athlete will know his own. Infections are spread through equipment worn by various athletes. Skin fungi live in leather, wool, and other types of equipment. Arrange for regular laundry service.

8. Have the boy's shoes cleaned (and oiled if leather), then marked carefully, stored safely, and ready to issue to him at the start of the next season. New shoes are too hard on the tender feet at the opening of the season. If possible, have the regulars, back from the year before, report a day or two before practice begins to be outfitted and assigned lockers. It is frequently the desire of the coach to have certain boys issued shoes or other equipment over the summer.

9. Watch varsity boys' shoes lest players be forced to break in a new pair on game night, or on the night preceding a game.

10. Make sure the socks are heavy enough to prevent blisters,

carefully fitted, and changed each day. A problem with athletes is to get socks large enough. Special care must be taken in laundering socks to prevent shrinking.

11. Give the shoes and socks first consideration, for most sports, in choosing and buying equipment. Foot troubles make up the first injuries of most sports. The feet have to carry the body, change its direction, and pull and shove it about. The toes furnish much of the grip, traction, and leverage. The feet will pound down on hard surfaces of all sorts—fields, floors, cinder and board tracks. Foot trouble persists or returns throughout the season.

12. Have duplicate equipment immediately available for varsity men.

The managers. Good managers are essential to sports squads. The manager should be interested in the sport and very anxious that his squad win. He should be loyal, industrious, meticulous in attention to detail, accurate, and self-confident. He is the squad representative and therefore should create a favorable impression in his contacts with the public. He should realize this responsibility.

The manager's duties are varied. He is usually responsible for most of the details of equipment. He looks after the petty needs of the players that the players themselves are too busy with game preparation to look after; for example, complimentary tickets for friends, telephone calls to relatives, and the like. The manager either assists in packing, or actually packs the equipment for trips. In secondary school, this packing should be supervised by the stock room man or coach unless the manager has displayed exceptional maturity of responsibility.

It is well to train the manager to assume travel arrangements. He can arrange for sleeping and eating, and for payment of bills and tips as outlined by the coach. The manager may carry out all the details of travel such as mimeographing and distributing itinerary sheets to the squad and coaches, arranging for taxis, tickets, meals, and hotel rooms. He meets the other team manager, ascertains game time, location of dressing rooms, and time that playing field or floor is available. He will need supervision while he is learning to assume these responsibilities.

In some types of contests, basketball for example, the managers keep score and time. Officiating in this manner is a grave responsibility for the inexperienced. The novice makes mistakes because he gets so interested in the game that he forgets his duties. To be competent, he must know the rules and enforce those for which he is responsible—notification of fifth personal foul, for example. He must never be so lax in his scoring or timing that he handicaps his own team's chances of winning. Errors by the scorer or timer may offset weeks of practice and strenuous effort by the players. The manager must realize that the boys are depending on him to be exact, accurate, and dependable. He should prepare by practicing his duties during squad practice sessions in preparation for the game situation.

From the standpoint of the coach, a good manager is an individual who is always on hand when needed and always out of the way when not needed. There are times when it is necessary for the coach to appoint the manager but it is better if the manager can be selected, by a committee, from a number of boys who have had experience as assistant managers the year before. The coach, captain, previous manager, athletic director, and one elected student government representative make an ideal committee to pick the sports manager from the candidates who tried out as assistants.

The following system is in use in some universities and produces exceptionally competent managers. Sophomores try out for manager for each sport and are listed as second assistants. Three boys are chosen at the end of the season from the sophomore seconds to become first assistant managers during their junior year. At the end of the junior year, one head manager is chosen from these three junior first assistants. He then becomes the manager in his senior year. The first assistants as well as the head manager receive some marks of distinction, awards, or the like, to motivate them. When this plan is in operation, the three first assistants from the junior class usually select from the sophomore candidates those three boys who are to become first assistants the next year. A varsity letter award goes to the head manager, and numeral awards to each first assistant. A few other rewards are added for motiva-

tion purposes, such as complimentary tickets to student dances, athletic events, and the like. Generally, the choice as a first assistant brings with it the election to a student honorary society.

The amount of help that a coach has, the size and adequacy of the facilities, and the amount of good equipment are factors directly related to the number of squad members that should be carried above the necessary minimum for the varsity team. One should remember that good care and good equipment foster the learning of the lowly substitutes who will make up the varsity of future years. Motivation is decreased and possibly killed by the necessity of playing in inefficient and uncomfortable outfits against highly skilled and larger opponents carefully and handsomely outfitted. The cleats of the substitute fail to hold in the mud, or his pads slip down and handicap him. His ill-fitting shoe spoils his punt, or it raises blisters that force him out of action entirely. The self-confidence, none too high at best in the substitute, begins to suffer. His learning is greatly retarded. He is not even allowed to look well as he trots out to sit on the bench. His love of the game begins to decline. These problems will be discussed further in the chapter on "Squad and Team Selection."

Discussion Questions

1. What are some of the possible advantages and disadvantages of the coach dressing in the locker room with his boys?
2. How should the players' valuables be taken care of during the practices and games?
3. Are footbaths of solutions supposed to kill skin fungi desirable at the entrance of the shower room?
4. Should players with uninjured ankles wear ankle wraps in contact sports?
5. How much disciplinary authority should be delegated to the assistant coach? Should he be allowed to "fire" boys?
6. Can players be depended on to treat their own minor injuries?
7. What are the best ways to keep loafers out of the training room? The stock room? The dressing room?
8. Should the trainer's opinion take precedence over that of the coach in the matter of injuries?

9. What disciplinary responsibilities should be placed on the stock room man?
10. Who should assume responsibility for the return of equipment issued? Of the return of the towels after the showers?
11. When playing basketball away from home, what is the best way to improve foot traction on a court still slippery from dancing, or a dusty and dirty floor?
12. Should the shoes and socks be given number one priority in player equipment budgets? Why?
13. Why is a knowledge of the detailed duties of an equipment stock room man needed by the beginning coach?
14. Should the coach be grounded in the skills and duties of the athletic trainer?
15. Should athletic dressing rooms be distinct from those used by the regular student body?
16. Is it desirable that boys playing different interschool sports in the same season have different dressing rooms?
17. What are the best methods to keep down the spread of skin fungi in shower and dressing rooms?
18. What are the purposes of a bulletin board in the dressing room?
19. How does the coach decide the best weight for any particular boy?
20. What aspects of sports can be taught in the dressing and training rooms?
21. Who is responsible for the boys' behavior while they are in the dressing rooms before and after practice? What discipline problems may occur?
22. Why is a warm shower called a form of "emotional therapy"?
23. What are the commonest types of injuries in football? In basketball? In track? In soccer? In baseball?
24. What records should the stock room man keep? The trainer?
25. What two major reasons are there for a practice area that permits private practice?
26. What are the major safety precautions in regard to an outdoor area? An indoor area? In regard to equipment?
27. Why is it advisable to have skeleton sub-floors of wood under a basketball floor?
28. What are some of the problems that arise when the same field is used for all varsity sports?
29. What candle power is essential for indoor movies of basketball games? How far should the camera man be from the floor?

30. Does the coach in the small high school need greater breadth of training than the university coach?

31. What are the special abilities you would look for if you were picking your assistant coach in your sport? What personality traits?

32. What should be the relationship (social distance, reserve, frankness) between the coach and his assistant? Should the head coach admit his errors to his assistant?

33. Is prevention of injury or sickness the trainer's best work?

34. Do college athletes know how to take care of their own health?

35. When football must be conducted without the proximity of a physician, what is the procedure to be prepared for emergencies?

36. What are the characteristics of a good stock room man? Of a good trainer?

37. How should managers be selected?

38. What are the duties of a manager on trips?

39. What personal characteristics are desirable in a manager?

40. What are the relationships between equipment and squad size?

Test Questions

1. Should the coach frequent the dressing room of the athletic squad after practice?

2. Are footbaths, supposed to kill skin fungi, desirable at the entrance of the shower room?

3. In contact sports, is it advisable for players with uninjured ankles to wear ankle wraps or some other type of ankle support in addition to the shoe?

4. Should the assistant coach have delegated to him the same disciplinary authority as that possessed by the head coach?

5. Can players be depended upon to treat their own minor injuries?

6. Should the coach be grounded in the basic knowledge essential to both the trainer and the stock room man?

7. When possible, is it desirable to have the athletic dressing rooms distinct from those used by the regular student body?

8. Should the manager be the final person on whom rests the responsibility for care of the players' valuables during practices and games?

9. Should jerseys and trunks be given priority over shoes and socks in selecting athletic equipment?

10. If different athletic teams are playing during the same season (foot-

ball and soccer, or track and baseball, for example) is it better to have the teams use the same dressing room even though another is available?

11. Is the dressing room bulletin board unimportant as a teaching device in sports?

12. Are weight chart norms taken from national averages good criteria for judging a boy's best playing weight?

13. Is the dressing room a relatively unimportant part of the *teaching* environment in athletics?

14. Would it be correct to say that a warm shower after practice is often a good form of "emotional therapy"?

15. Assume that numbers of injuries vary from sport to sport; do the types of injuries most commonly occurring tend to remain the same regardless of the sport?

16. Do beginners learn faster in sports if they are being watched by interested and partisan spectators?

17. Is the size of the squad retained by the coach somewhat dependent on the size of the equipment budget?

18. Is it usually better to keep the relationship between the head coach and his assistant on a quite formal basis?

19. Is the prevention of injury and sickness the trainer's best work?

20. Should managers be given a try-out before selection?

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3

Squad and Team Selection

"Oh, Hell! what have we here?"

MERCHANT OF VENICE, Act 2, Sc. 7.

PREREQUISITES

Eligibility. The coach, for his own protection, should make sure that his boys are all eligible to play. If he does not exercise such precaution he may have his team broken up after he has the players trained as a unit, or he may have to forfeit games already won. This latter penalty is not uncommon. It is not the purpose of this book to advocate any eligibility policy, but rather to clarify to the prospective coach what types of eligibility rules he may encounter.

Eligibility standards vary greatly. The regulations for interscholastic sports may include such factors as an upper age limit (19-21), a specified number of years of participation permitted at the senior high school level (3-4), maintenance of certain passing grades in other subjects, and rules against immediate participation by transfer students.

Some years ago New York State passed a rule that post-graduate students could not play on high school interscholastic teams. Prior to this rule, grade requirements, years of competition, and an upper age limit were the determining factors, of even post-graduates.

A certain basic amount of academic achievement is not universally required. One large city in Pennsylvania has a special curriculum adjusted, by competent educational authorities, to the rate

of progress of those pupils who are considerably below average in that aspect of intelligence necessary for learning the academic subjects of the school curriculum. The pupils belonging to this opportunity group may progress through their teen age years taking subject matter that is of benefit to their particular stage of development. Those pupils who can develop adequate skill are permitted and even encouraged to participate in the interscholastic athletic program as a part of their education.

A restriction of the number of years of a student's participation in interscholastic competition is a very frequent practice. One famous Pennsylvania high school was dropped recently by the state association from interscholastic competition, thereby forfeiting its championship. The evidence indicated that the school had used on its team a boy who had previously played four years of interscholastic athletics. Cases frequently occur wherein games are forfeited because the use of a boy playing his fifth year of athletic competition is discovered after the games are over.

The coach will do well to investigate thoroughly his players' previous years of competition. Boys want to play and may not admit their previous participation record if it endangers their possibility of playing another year. Sometimes the coach is totally unaware of a boy's ineligibility until a rival school produces the evidence. It does little good for the coach to offer his ignorance of the rule infraction as an excuse after the evidence appears. The game is forfeited and it is generally assumed that the coach was wilfully trying to beat the rules. The sports public is as suspicious of intentional wrongdoing as the shrew who finds a blonde hair on her husband's coat collar.

The eligibility of the high school's "opportunity group," mentioned earlier in the chapter, is an example of an attempt to adjust to the individual needs of the students rather than to set up regulations irrespective of these needs. The idea that athletics should be available to all students who may profit educationally by the experience is not restricted to high schools. Some universities permit graduate students to participate in intercollegiate sports. There seems to be little objection to this practice on the university level

as long as the particular institution offers no inducements to the athlete to attend, keeps the academic standards so high that the athlete can devote only a reasonable portion of his time to sports, and charges spectators no admission.

The interpretation of the "passing grade" regulation varies from the situation where sports have the same curriculum prestige as any other subject, to the requirement of a weekly report from each teacher of a satisfactory grade for each boy before his participation in sports is permitted that week. This latter procedure makes the job of the coach extremely difficult. It is a rare boy who does not appear unprepared in class work at some week during the season. The coach is almost afraid to stir up enthusiasm for a particular game lest he distract the students' interest from the academic activities, and be forced to face his opponents at the end of the week with some of his best men out of the line-up.

A semester-by-semester grade requirement, determining grade qualifications for sports by the academic record of the preceding semester, is the most satisfactory from a coaching standpoint. If this long stretch is thought to be too extensive a period of freedom from check-up and penalty, for the immature boys, the half-semester or nine-week period of qualification might be acceptable.

If academic grades of certain quality are to be a prerequisite for interscholastic competition, the half-semester qualification is easiest to defend from an educational viewpoint. In the first place, daily grades are not a very accurate indication of degree of permanent retention of subject matter. In the second place, individual fluctuation in performance is a human characteristic. This fluctuation may be due to activities in other classes, moments of lowered health status, home problems, or the bemused state induced in an adolescent boy by a dazzling smile from some coed. In the third place, one grows mature by assuming responsibility. The educator hopes gradually to adjust the weight of the responsibility for studies so that the youngster can become accustomed to it and develop more and more self-responsibility.

Because the week-by-week grade reporting creates a situation impossible for all the athletes to meet successfully, subterfuges are

employed. The coach finds it a little difficult to assume the responsibility for furnishing incentives for study in subjects which he is not teaching and for this reason may teach classes in which many of his athletes enroll. Certain friends on the faculty "go a little easier" on the athletes in their classes. The impression even may get around among the teachers that failing an athlete can cause great unpopularity in the community. Unfortunately, the rumor may have factual basis.

The artificial situation of weekly grades and resulting "get-by" procedures is unfair to the faculty. Moreover, a loss of respect for the athletes is very likely to ensue. The nine-week or eighteen-week period of teaching, however, gives the teacher time to teach, see results, and measure ability fairly accurately. In fairness to the teacher, and to the boys who may be handicapped later in life without knowledge in the basic subjects, the coach should support the teacher in the exact estimation and reporting of the boys' ability and knowledge. The estimate should be based on the boys' abilities and knowledge when the course began, and the amount of progress by the time the course is completed.

One of the worst evils that comes from the "softening" of the grade requirements for the athletes is that the brighter boys, who should go far with their education, may learn to slide along on the lowered standards, may develop bad study habits, and may approach the higher levels of high school or college without adequate foundation in even such a basic skill as English.

If proper educational procedures are being utilized in managing and teaching sports to athletes, regulations for qualification as a participant could be confined to those factors—age, height, and maturity classifications—that equate the competition for safety and for best learning. In other words, the administrators could use as a single basis for regulation the equalization of the competing groups in order to improve the learning situation. But ideals are a long jump from practical considerations and it is a little difficult to imagine a school voluntarily barring its best athlete from certain games because he is bigger, stronger, older, or more mature than the

boys representing the opposition. For this reason many rules have been set up.

Whatever the eligibility requirements, the coach must consider them when he selects his squad. In case of a choice between two boys who seem to be almost equal in their other abilities, the boy with the better academic record is the safer choice. More often, the boy who is brighter academically will learn sports faster. But the correlation between mental and physical abilities is too low to justify much prediction of success in one field because of success in the other. Sometimes a boy will work harder to succeed in the one field as a compensation because he has had so little success in the other.

The boy whose academic record indicates that he may not be eligible is a risky choice for molding into a team unit. If such a poor student does hold down a varsity berth, the coach should spend extra time and effort in getting a substitute ready to replace him. The substitute should be given the game experience any time the score permits in order to prepare him for taking over completely if the other boy is ruled out by grades.

Medical fitness. The practice is quite general of requiring a thorough medical check-up of each contestant each season before he is permitted to report for the athletic squad. Many state associations require this examination. The schools tend to be rather conscientious in seeing that no athlete ever appears in competition without this medical examination. A written statement of fitness for participation in interscholastic sports, signed by the physician, is kept on file by the school. It would indeed be a sad lapse in duty if a coach played a boy without this certification of fitness. The responsibility for injury might then rest directly on the coach, or on his administrator if the administrator had knowingly permitted such violation of sound safety and health practices. No such case of administrative negligence has ever come to the attention of the writer.

If a boy is compelled to absent himself from the squad due to sickness during the season, it is best to have a medical examination

and certification of fitness for competition before the boy resumes play. Growing boys may have so much of their resistance weakened by the growth process that their period of convalescence is quite long. Vital organs may suffer if intense exercise is permitted before full strength and vitality are recovered.

Parental consent. The signed consent of the parents for their boy to play interscholastic sports is another prerequisite for participation. It is a school obligation to consult the parents before subjecting their offspring to the rigorous activity of interscholastic sports. It creates a better attitude in the parents toward sports. It may take some of the responsibility off the shoulders of the coach in case injury does occur. Injuries do occur in spite of all precautions. The parent may agree to defray the medical or hospital expense in case of injury. A better plan than that of having the parent or the school responsible for payment for injury treatment is the over-all coverage by a sound athletic insurance policy. Where no state or league joint policies are available for membership, it seems best for the school itself to take out some policy covering all its athletic activities.

Some parents feel that athletics are a waste of time for their youngsters. Some see no need for additional exercise and feel that their boy should spend his energy in "work" instead of "play" either for the lucrative value, or for the supposedly greater character training. Some parents do not want their children to participate lest the extracurricular efforts detract from their studies. A few are afraid their boy will get hurt (although he may be quite big and strong) by associating with and playing hard games with the "rough" boys of the school. The coach may feel that the parents do not know what is best for their own son, nevertheless, he is their boy. They pay for his education and help pay for the public school. The coach must await parental consent before using such athletes. Pages 55 through 57 represent the content on the respective sides of a 4" by 6" card used for medical certification and parental signature, respectively, by the Pennsylvania Interscholastic Athletic Association.

Perhaps the parents can be persuaded to allow the boy to partici-

pate in intramural competition, or even junior varsity participation. If the coach can get the parents to attend these sports affairs, see their own son in action, and be a little proud of his achievement, the boy himself may be able to do the rest of the salesmanship. If the coach himself tries too much persuasion, he is liable to bitter recrimination in case the boy does suffer some injury—and what active American boy can go through life without a broken nose, sprained wrist or ankle, broken bone, or some other such mishap? The coach does not want to put himself in the situation of being personally responsible, according to the parents' viewpoint, for "practically forcing the boy into the dangerous activity."

PHYSICAL, PHYSIOLOGICAL AND PERSONAL FACTORS IN SELECTION

The factors a coach emphasizes in selecting a squad and team depend on (1) the styles of offense and defense he prefers, (2) the positions open for which fewest men are available on his squad, (3) the coach's background and preferences, and (4) the action-patterns of the boy when his individual traits combine into his unique personality.

Factors such as height, weight, speed, aggressiveness, and the like do not act singly. The coach must consider each factor in terms of what happens to it when it is fused with the boy's other traits. A boy too small to play on any interscholastic team may have the best attitude of all the candidates reporting for a try-out. The tallest boy, or the strongest boy, may be so slow that he is useless in sports competition. The heaviest boy may be so weak he can not even propel his own weight with any degree of sports effectiveness. The five foot, six inch boy may be the "spark-plug" of a basketball team which averages six feet, three inches in height.

*Physician's Certificate**

In accordance with the purpose and spirit of P. I. A. A. By-Laws, Article V, Section 1 and 2, printed below, I have examined the general physical condition of a pupil of High

* Presented through the courtesy of The Pennsylvania Interscholastic Athletic Association, Edmund Wicht, Executive Secretary.

SQUAD AND TEAM SELECTION

School, and find the said pupil to be physically fit to participate in athletic contests with members of High School teams in the sport and during the sport season as indicated by the date of the examination and by my signature. I have given special attention to the condition of the heart and lungs and have also noted the absence of rupture and venereal disease.

Sport	Sport Season	Date of Examination	Physician's Signature
Football	M.D.
Basket Ball	M.D.
Soccer	M.D.
Wrestling	M.D.
Swimming	M.D.
Gymnastics	M.D.
Volley Ball	M.D.
Baseball	M.D.
Track and Field	M.D.
Golf	M.D.
Tennis	M.D.
Hockey	M.D.
Boxing	M.D.
Cross Country	M.D.
Rifle Shooting	M.D.
.....	M.D.

By-Laws

Article V—Section 1. PHYSICAL EXAMINATION NECESSARY BEFORE PUPIL BEGINS PRACTICE.

No pupil shall be eligible to represent his high school in any inter-scholastic athletic contest unless he has been examined each sport season by the school physician or if none is employed, then by another licensed physician and his physical condition pronounced satisfactory before he commences to train or practice in the sport in which he intends to participate. A certificate to this effect shall be on file with the principal at the time said principal certifies to eligibility of his players.

Section 2. RECOMMENDED PERIODICAL EXAMINATION

In addition to the examination of a player before each sport season, it is recommended that players be given thorough physical examinations by a physician, periodically, throughout the actual playing season.

(over)

*Parents' Certificate**

In accordance with the purpose and spirit of P. I. A. A. By-Laws, Article IV, Section 1, printed below, I give my consent for

a pupil of High School to take part in athletic contests during the school year 194...-194..., in the sport or sports as indicated by my signature ... following the name of the said sport or sports approved below.

Sport	Signature of Parent or Guardian
Football
Basket Ball
Soccer
Wrestling
Swimming
Gymnastics
Volley Ball
Baseball
Track and Field
Golf
Tennis
Hockey
Boxing
Cross Country
Rifle Shooting

Attest Principal

By-Laws

Article IV—Section 1. CONSENT OF PARENT NECESSARY BEFORE PUPIL STARTS PRACTICE.

A pupil shall be eligible for practice or participation in each sport only when there is on file with the principal a certificate of consent which is signed by his parent or guardian.

NOTE: For By-Law requiring PHYSICAL EXAMINATION by a physician before pupil is eligible, see other side of this card.

Revised September 1, 1949

(Over)

* Presented through the courtesy of The Pennsylvania Interscholastic Athletic Association, Edmund Wicht, Executive Secretary. (Note: Page 57 includes materials on reverse side of card quoted on pages 55 and 56.)

Height. The game of modern basketball has thrown great emphasis on height. The basket is ten feet high. If a boy can jump and reach it he is likely to get more baskets. It takes much less accuracy to throw a ball, nine and a quarter inches in diameter, a distance of a foot or so into a ring eighteen inches in diameter, than it does to throw the same ball five or six feet upward to get it over the rim. The big man may merely shove the ball a few inches so that it falls down through the ring. When the little fellow tries to score, he will probably have to shoot up over some big defensive man. The shorter boy is handicapped in jump-ball situations because the tall man can out-reach him even after a jump. The big men are essential for rebounding, and have the advantage defensively because they can bat down the try-for-goal after the ball has left the little fellow's hands. The small man may possess better long-range shooting accuracy and may be a better ball-handler, but many times the little man has to wait until the big man gets the ball for him. Of course, if the opposition is equally small, the disadvantage of shortness disappears. But skill of a team will not compensate for great lack in height.

One should remember that "small" in sports means *average* among the general populace. A five foot, ten inch man is taller than the average man, yet he is considered small in many sports. In a recent national basketball tournament, the two forwards on one team were each five feet, eleven inches in height. They were the smallest players in the tournament. The newspapers called them "the midget forwards." The great Bob Kurland, formerly of Oklahoma A. & M., and more recently with the "Oilers," is seven feet tall. Bill Spivey, the 1951 Kentucky center, is over seven feet tall. A few years ago Bowling Green University brought a great team that averaged six feet, five inches in height into the National Invitation Tournament in New York. Hamline University and West Texas State have each had great teams that averaged six feet, six inches, or better.

Professional basketball should give some indication of the value of height. It is fairly certain that the professional coach will try to use whichever player contributes the most to winning. There

are only a handful of men under six feet in height among the outstanding professional teams. Rochester had two "small forwards" on their great team of 1949, Bob Wanzer and Bob Davies, but both were over six feet tall. The famous Ralph Beard of Kentucky and of the 1948 Olympic team is a wonderful ball player, and is only five feet, ten inches, in height. Alex Groza is another great player from the same national championship team, but Alex is six feet, seven inches tall. Beard was the only "little" man on that superb Kentucky team which won so many titles, although the team as a whole could not be considered giants in a modern basketball sense.

In soccer, the taller man may have some advantage in heading but, in contrast to basketball, the game is played chiefly on the ground with the feet. The very long legs of the tall man may be cumbersome levers for this game. The tall man's center of gravity is high, hence less easy to control. The short steps of soccer play tend to be unnatural to boys with long legs. Bill Jeffrey, the famous old Scotchman, who in 1950 and 1951 took his Penn State teams to the first two collegiate soccer bowls ever played in the United States, used to look at the giants of basketball and say facetiously, "They dinna ken how to use their feet, laddie. We would have to cut them in two and make two soccer players out of one." ¹

In most of the other sports, height is some advantage. A tall end is better for pass-catching in football. A tall halfback is better for pass-catching and almost necessary for successful forward-pass defense. In fact, the defensive platoon must have considerable height in all its men covering pass receivers.

A tall first baseman makes a better target for the many infield throws to first base. In addition, he can reach out far enough to catch the ball a little sooner and cause more outs, or he can reach wild pegs that would mean an extra base for the opposition if a short man were covering the first base position. A tall pitcher, assuming he has other necessary qualifications, can throw the ball down at the batter from an angle more difficult to hit accurately and can produce greater speed in his long arms, wrists, and

¹ Bill Jeffrey, personal interview.

fingers. The baseball scouts look for big outfielders. They think the big fellows have more power at the bat, and more stamina through the daily grind of the hot summer months.

Defense in sports seems to be aided by height. The long-armed boxer can keep his left in the face of his shorter opponent and keep him away. He can actually hit his shorter opponent when the latter is too far away to retaliate. Bigger defensive men in lacrosse can check the opponents better and reach more throws. In track, above-average height seems to be some advantage in high jumping, the high hurdles, and the weight events. In the short and medium distance runs, more good track men seem to be above average height than under.

In an individual game such as tennis, height is an asset in serving or net play. The overhead reach makes possible the placement of the ball at angles harder for the opponent to return. A long reach in a net man makes it more difficult for an opponent to stroke the ball past him. In swimming, the value of height is more difficult to estimate. The longer levers (arms and legs) may be some advantage, but the short Japanese seem to be quite successful in international swimming championships.

Almost without exception, the crowd prefers the small man. Whether it is because he is the underdog, or whether it is because most of the people in the crowd are small also and resent the tall man's advantage, the spectators will root for the little fellow. Perhaps it is a human inner resentment induced by inferiority feelings at having to look up at anybody (admit superiority), even physically. To the crowd, the hero must be the one to conquer insuperable obstacles. For vicarious thrills, people want to see success against great odds. Such success gives them a needed feeling of rightness and justice in life. They need it to assuage their lack of confidence resulting from many years of battling, with paltry human efforts, the problems of life and humanity. Man feels better after nourishing the illusion that superiority can be overcome by indomitable spirit.

The little fellow does seem more colorful. He moves his feet quicker. He has to move them more quickly because he must take

more steps to cover the same distance as the taller man. The large man in motion never looks as fast as the small one even though he is travelling faster. He takes fewer steps per unit of distance, and does not need to move quite as far with his feet because his arms will reach farther. But the crowd loves the little "scat-back" or the midget forward. They love the great defensive saves of a Segura more than the smashing volleys of a Drobny. For color and crowd appeal, the small man far outranks the giant. If the dynamic energy, the never-say-die spirit of the small man can make up for his handicap in size, use him. The "spark-plug" on many a ball team is *one* little fellow.

Weight. The 1948 Olympic gymnastic coach says, "If the prospective candidate has a big rear end and big legs, forget about him."² The value of weight depends to a great extent on its distribution over the body framework, and whether it represents bone and muscle or just adipose tissue. Football coaches want weight in the bodies of their boys, but they want weight that can be handled quickly. The basketball coach wants enough weight on his boys so that they are not easily brushed away under the backboards.

Force equals mass times acceleration. If the heavier man can move as fast as the lighter man, he can exert more force. Whether he can direct or control that force as well must be determined by observation. As the years go by, the successive athletic teams tend to be bigger and stronger, and therefore heavier. According to army statistics, American men average fifteen to twenty pounds more in weight than they did a generation ago. They also average about three-fourths of an inch greater height.

Weight has some relationship to over-all development, health, and vigor, considering man in the aggregate. The coach must examine the prospective athlete to observe whether such relationship exists in his particular case, or whether the weight is merely an indication of soft living and gluttony. Because weight is related to over-all development, health, and vigor, many coaches prefer the larger man even though the skill levels are about the same.

² Gene Wettstone, personal interview.

They think that the bigger man will possess the stamina for the long grind, whether it be seventy-two holes of tournament golf with bad weather some days, five-set matches in successive days of tournament tennis, or daily baseball games throughout the hot month of August. The contact games add the advantage for the bigger man of collision effectiveness.

Speed. There are many types of speed and most are important in sports. Quick perceptual speed is required if the batter is going to see the breaking curve of the ball soon enough to adjust his swing. The charging football lineman must be a fast starter, but it is *less* important that he be able to run fast for a hundred yards. The boxer must have great speed in his hand movements. This is not the same type of speed that the champion rope climber possesses; neither is it the same that the elusive forwards possess in soccer. The speed of the pitcher's delivery in baseball is a different type of speed from that required for the quick snap of the ball by the catcher to pick off the base runner trying to steal second base. Perhaps if pitcher and catcher changed positions, neither could qualify for the type of speed needed in the other position.

In sports, the types of speed usually thought of first are *the speed of fast start*, and *the speed in the dashes* in track. *Change-of-direction* speed probably comes next in emphasis. It involves a control of balance and of inertia especially important in team games. *Perceptual speed* is quite important in seeing openings for offensive successes. The soccer forward detects an open teammate out of the corner of his eye and deflects the ball to him. A basketball dribbler leaves his feet for a one-hand shot while going at full speed. While in the air he finds himself covered, senses an open teammate at one side of the backboard, and passes for an assist. The boxer sees the exposed chin of an opponent in a flash and executes the six inch jab.

Without these fast perceptions, the great offenses are almost impossible. The soccer player who must trap the ball while he looks the situation over weakens an offense. The forward in basketball who can not see almost instantaneously that the opponent has his

maneuver covered loses the ball. The boxer without this great perceptual speed not only misses his offensive opportunities but makes the same errors on defense—fails to see the jab in time to block it, duck it, or roll with it. The baseball pitcher either sees his fast ball when it is hit back at him with tremendous speed and interposes his glove, or he gets hit. The outfielder who quickly estimates the ball direction and travel-distance (a perceptual habit, not a process of reason) is a better fielder than the fleet-footed boy who starts too late, then makes a “grand-stand” catch.

Speed is the reason little men still hold down positions on most teams. “You can’t lick him if you can’t catch him” is true either on the fast-break in basketball, on an end run in football, or around the oval in track. There are a great many more boys from which to choose in the medium height range than there are among the very tall boys. The coach’s chances of finding near-peaks in the speed factors are therefore a little better among the boys of medium height. The competition for the job that can be held down by the “little fellow” is much keener.

Excess energy. Some boys seem to have a superabundance of energy. Because they can practice longer with enthusiasm, they learn more. They do not lose their accuracy in the last quarter because of fatigue. They put on extra spurts of effort to win after the other fellow begins to tire. It is well to watch for this energy aspect in selecting boys. Signs of it are many. Mischief after practice is one. The energetic boy may be turning handsprings while the other boys stretch out to rest. He wants to take a few more shots at the basket, a few more kicks at the football, or play one more set, after the practice is over. He seems to get a little more joy out of the game than do the boys of less energy. If he can qualify in other respects, this excess energy will make him doubly valuable to the team.

Personal reactions to adverse conditions. In sports the “front runner” is a phrase used to describe a boy who is exceptionally good as long as everything goes well, or as long as he is in the lead, but who collapses miserably when the going gets tough and he is

behind. What does the boy do when he loses a hole or two early in the match in golf? What does he do when the opponents jump off to an early lead in baseball, football, soccer, basketball, or whatever his sport happens to be? What does he do when he thinks the official has called a couple of bad decisions against him? Does he act surly, think he is being persecuted, and loaf for a play or two? Does he cost the team a serious penalty by insulting the officials, or by trying to get even with an opponent whom he suspects of playing roughly? Does he resort to fouling when palpably outplayed and made to look inferior by an opponent? Does he give up and play half-heartedly when his team gets behind late in the contest?

The coach wants to know about these personality traits in the boys he selects. If possible he obtains this type of information from people who have known the boys, coached them, or played with or against them previously. The boy who is dependable in emergencies, who never gives up, who bears down and does a little better when the pressure is great, is the type the coach is looking for. Boys that are not able to battle against odds are a handicap in the difficult games or matches. They will not be needed in the easy matches.

Intensity of urge to be an athlete. Ray Conger, the great miler of the late 20s and the early 30s says that the chief difference between the winner and the "also rans" is the willingness of the winner to punish himself. Gene Wettstone, the coach of the 1948 Olympic gymnastic team says, "Some kids like to pay the price to be good because they haven't excelled in many other things. They will work twice as much as others."³

To become a great athlete, the boy must have an intense and persisting urge to do so. It must drive him through long, hard practices, discouragements, temporary misfortunes, and tempting distractions. The beginning squad candidate who would rather date a girl than practice has little athletic future. The boy who loses his enthusiasm and cuts practices occasionally will not go far. The

³ Ray Conger and Gene Wettstone, personal interviews.

boy who eases his efforts and stops trying when he gets a little tired is not made of the stuff for which the coach is looking.

Character. If the coach can find little difference to choose from between two boys, the observation of certain character traits may help. Aspects of character that are worth consideration in sports are: (1) willingness to devote laborious effort to the success of the group, (2) observation of health habits as an aid to fitness, (3) ability to get along unselfishly with squad associates, (4) honesty in regard to equipment or teammates' possessions, and (5) giving full credit to teammates for their contributions to the team's or the individual's success.

The blockers in football, the boys who earn points for second or third place in track, the substitutes who put on an excellent demonstration of the next opponent's offensive and defensive style, are frequently those boys who are willing to devote their best efforts to team success.

The coach is glad when he runs across one of those idealistic, clean-living high school boys who governs religiously all his sleeping and eating habits in order to be at his best for the team. There is the boy who finds that he tires too easily, then watches his health habits more closely and budgets his time so that he can get another hour of sleep each night. There is the boy who turns down the cake and pie his mother urges on him lest he lose some degree of fitness for his team. There is the boy who refuses to attend the dance the night before the game for fear he will be fatigued during the last part of the contest the next day, and therefore lose some of his accuracy in hitting, kicking, throwing, passing, or whatever skill his game demands.

Unfortunately, there is also the boy who always wants better equipment, more favors, more limelight than his teammates; and the one who steals the athletic socks, shoes, or jerseys; or the individual who is always trying to sneak away with another ball. There is the player who blames his teammate for his own error; but there is also the one who says, "It was my fault, coach," when the coach reproves a teammate for fumbling a pass. There is the

young athlete who says, "Nice pass" to the one who feeds him an assist, and the one who says, "Thanks, pal" to the blocker who clears the way, or to the teammate who switches on defense and tries to cover two men after another teammate's defensive lapse.

The average coach would like to weight the character factors heavier than is possible. It would be so much more pleasant if the boastful, selfish, domineering boy could be replaced by the polite, courteous lad of lesser ability. But skill achievement is the *sine qua non* of competitive sports. Perhaps the gentlemanly lad does not need the lessons of sport as much as the swaggering braggart. Sports squads, particularly in the contact games, tend to deflate under pressure the puffed-up specimens.

Present skill level versus potentiality. Some coaches pick their squads entirely by competitive matching. Play-off eliminations are used. Selection by competitive matching is easier to administer in the individual sports than in the team games. In the team games, the boys are played opposite each other, and moved around until each has been matched against others trying for the same position. This technique of competitive elimination is better for picking the starting team for a particular contest than it is for selecting the lower level squad members.

Boys do not learn at the same rate. The amount and kind of previous experience will differ from boy to boy. Their temperaments, attitudes, and health habits differ. The degree to which each will profit from coaching will be different. A boy with lots of previous experience, or a boy who has practiced and kept himself in better physical condition for the particular sport during the preceding months, will look better at first. Some other boy may be superior by mid-season or sooner.

Many coaches want to evaluate the various boys' form, learning rate, height, weight, speed and energy, body build, or temperament, before deciding which of those boys below immediate playing calibre to keep on the squad. The lower half of the squad will not play immediately, anyway and thus it is necessary to estimate which will be better in the future. Present skill level in itself is inadequate basis for making this estimate.

EVALUATION DEVICES

Squad selection by tests. Mr. Wettstone, the American Olympic gymnastic coach for 1948, once constructed an elaborate test for predicting potential gymnastic success.⁴ He never uses it. According to his present opinion, this test is too long and too complex; moreover, a boy whose potential is limited, according to the test, may yet develop into a fine athlete.

The writer joined four other coaches some ten years ago in an extensive study of basketball tests. After a year of experimentation, a test was assembled which correlated .80 with the criterion. The criterion was the ranking of the players based on observation of their efforts in competition against each other. Five judges scored the players independently, each judge independently assigning a rank to each boy. The criterion rank for each boy was the average of the five judges' rankings. The coaches gave the test a rather thorough trial but the test-selected "best five" players could not defeat the coach selection of the best men out of the remaining boys. The five coaches finally gave up these tests and attempted instead a refinement of their observational records and their movie analysis.

There seem to be additional factors which are very important but which are not measured by any objective test. These factors may be such aspects as strength of one's motivation under highly competitive situations, temperamental response to pressure, aggressiveness, and certain physiological correlates including extra-energy availability and higher level of physiological functioning.

For the benefit of those readers who have little background in statistics, it should be stated that the .80 validity correlation found for the above-mentioned test does not mean that the test is eighty per cent accurate. It merely indicates that the test probably would pick the right men forty per cent better than pure chance. Of course the numbers with which the coach is dealing are so small that group statistics become less reliable. Such statistical predic-

⁴ Gene Wettstone, "Predicting Gymnastic Success," *The Research Quarterly of the American Association of Health, Physical Education & Recreation*, 9:4, December 1938.

tion concerning individuals at the extremes of the range (the best athletes, for example) becomes little more than an entertaining mathematical exercise. These hypothetical selections merely direct the coach's attention to certain boys who may be worth further observation.

Experimental attempts to apply educational statistics to sports selection are worthy research problems. Some physical education specialists have advocated the use in team selection of tests supposed to measure physical fitness, hypothetical general motor ability, and the like. Coaches need very badly some quicker means of selecting exactly the right boys for their squads and teams. Many coaches have tried various tests but usually come to the conclusion that the case history, the cumulative record, and the day-by-day observation of the boy bring about more accurate selection. The experienced coach's day-by-day observation is refined by his score card of detailed errors and successes of players, and by subsequent reranking of his first team candidates. These records are epitomized by the coach before each contest to give a basis for team and substitute selection.

One owner of a major league baseball club hired a trained psychologist of national renown to administer such tests as he deemed suitable to select prospective candidates for the club's farm teams. The owner found that the "jury of experts" (the baseball scouts and coaches) were able to pick from the boys remaining after the test selection, a team that regularly defeated the test-selected team. This single instance should not be used to devalue the contributions of the field of psychology to the teaching of sports. The field of sports teaching is continually profiting from psychological studies of learning techniques and procedures, personality analysis and treatment, and the like. The industrial psychologist reported long ago that the best predictive test of ability was a sampling of performance in the activity in which prediction is desired.

Tests, check lists, and movie analysis. Coaches frequently employ tests, but they are usually performance tests made up of parts of the actual game; for example, a baseball coach checks the percentage of balls and strikes out of a dozen tries that a warmed-up

pitcher can throw over a practice plate.⁵ Basketball teams play games of "two-on-two" or "twenty-one." The basketball coach keeps floor charts of the scrimmages and games of his squad members. These charts show the number of shots tried, and which were successful. One or two clerks count the individual rebounding on both offensive and defensive backboards. Someone else checks the bad passes, the violations, and the assists. The score book shows the percentage of fouls made.

Football coaches have carried the analysis to the extent of going over the movies of each game for each individual player until they have a complete summary of his play for the entire game. One famous coach writes each boy a report listing exactly what the movie analysis has shown of the boy's entire game performance. Another coach has the entire football staff follow the movies of one player throughout the game, rating him on each play. The movies are reshown until each player is so rated. This type of rating prevents false impressions from one or two spectacular plays. It brings out the consistent, dependable boy who may have escaped accurate observation in the complexity and speed of team play.

Rating scales. The beginning coach of team games should endeavor to memorize rather thoroughly the items that he intends to use in rating his boys. He will need to have some way of recording observations because the mass of detail is too great to be carried in his head. Helpers usually can be found to score and record specific types of errors or successes. The job of rating is never done. Boys change every day. A little experience with an objective type of rating of detail successes and errors of his squad boys will soon clarify this fact to the beginning coach. Boys progress at varying rates, and fluctuate through wide or narrow ranges during the process.

One master's candidate, a basketball coach, took as his graduate school problem the construction and validation of a score card in basketball. He used the expert ranking of players by independent judges as the criterion against which to validate his score card. He

⁵ Joe Bedenk whose Penn State team played St. Johns University of Brooklyn for the Eastern Collegiate title in 1949 suggested this test as useful in sizing up game pitchers.

used the following items: bad passes, assists, percentages made of fouls and field goals, rebounds recovered, interceptions, and the like. Some of his items were scored as positive values and some as negative values. The young coach had some trouble with a member of his thesis committee because the score card "had too low a reliability." The technique recommended to the young man for establishing the reliability for his score card was that of *consistency of ranking*. It seems that the master's candidate had one of those teams in which one player would be high scorer one game, and a different player, the next. In addition, the young coach had one player who would be his highest ranking star one game but who, in the very next game, would be so bad that he had to be taken out quickly to save the game. Had this young coach's score card really assigned his players the same ranking on successive game nights, it would have been highly *unreliable* in the true sense of the word.

Experienced coaches' opinions. In a further attempt to determine actual practices, the coaches of the various sports at The Pennsylvania State College were interviewed. These men have been coaching from fifteen to forty years and all have been eminently successful. Many of the points on squad selection already stated were corroborated by these interviews. Some additional points more or less specific to particular sports were suggested. These special emphases are listed below.

Mr. Jeffrey, the soccer coach, looks for the boy who kicks from the knee down, who does not reach out for the ball. He wants a boy who prefers to speed up the play by redirecting the ball rather than the boy who prefers to trap it. He wants the boy who has good "field vision," plays position, and sees openings. He does not want an individualist.⁶

Mr. Bedenk, the football line coach, brought out a point that is important in determining further development. He says he likes the candidate who is somewhat immature, but rather successful already, with the long frame. If the boy with the big frame is only seventeen or eighteen years old when he graduates from high school,

⁶ See also Bill Jeffrey, "*The Boys with the Educated Feet,*" *Association (Soccer) Football*, rev. ed. Minneapolis: Burgess Publishing Co., 1948.

he will probably weigh two hundred and fifteen pounds or more when he is fully developed. If the short boy of the same weight gets heavier, he is likely to be too fat. The twenty-one or twenty-two year olds have probably almost reached their peak already.

Mr. Werner, the track coach, looks for unusual speed, spring, or stamina. He thinks speed is about seventy-five per cent inborn but can be considerably improved. He says to watch for the boy with "sloppy" form who is nearly as good as the point getters. He may be "a diamond in the rough."

Mr. Thiel, the lacrosse coach, likes experience in other sports second to experience in lacrosse.

Mr. Speidel, the wrestling coach, is interested in knowing who coached the boy, at what weight the boy wrestles (keeps squad balanced at various weights), and what the individual competition between boys shows.

The basketball coach, Mr. Gross, wants the boy who rather enjoys contact under the boards, or who never feels it.

Mr. Rutherford, the golf coach, wants a background history of his candidates, if possible. He likes to talk to the country club professional, for example, who saw the boy play many times. He likes sound form in the movements of the candidate, but thinks form can be developed if the boy shows promise in other ways. He is a little more in favor of the larger, more rugged boy because he thinks he may stand up better in bad weather and long tournament play, but he says there are many good small men. He wants to know the candidate's usual score, how hard and consistently he will work, and how he reacts when he gets a stroke or two down as the last round starts.

Certain sports such as diving and gymnastics depend on judges' rating of *appearance* for points. Mr. Wettstone, the gymnastics coach, looks for a squad candidate who has a mannerism that everybody likes, a boy who walks nicely, and lightly—not heavy in style. He says the body build must look good, otherwise the boy can not win a match in a sport that is judged to such a degree on looks. A relatively great amount of arm strength in relation to body build is important. Even the complexion of the boy is im-

portant. Some good men may make high scores and some may not when the only difference is the appearance factor. One weakness that eliminates the gymnast is "blacking out" on tumbling and giant swings. Some boys break in the middle of an act and fall. Other boys never break. There seem to be no kinaesthetic tests available that will reveal this weakness. The "black out" behavior appears, if at all, in the first few weeks. The boy with such weakness should choose some other sport.

All the coaches want the boy with the great desire to be a winner, not just a squad member. All want the boy who will work unceasingly, who will not give up, and who bears down a little harder when the chips are down. The ski coach wants the boys to be a little reckless in attitude, but the gymnastic coach does not want them to be too courageous. The latter wants them to sense their own weaknesses and work on them instead of trying to find short cuts. The track coach is interested in the boy who chased cows or kids, jumped fences, or threw rocks across the river when he was a youngster, and he wants the boy who will take coaching and who dreams of becoming an Olympic champion.

Squad size. If the community wants as many of its youngsters as possible to get athletic experience, and is willing to provide the staff and facilities, there is no limit to squad size except in the number of boys in the school. Some private preparatory schools request that all youngsters attending their school obtain athletic sports experience. These schools have house teams, dormitory teams, teams for each form, "A" and "B" leagues in each, and a school team that plays other institutions. Most of the preparatory school faculty know and work with a group of boys on the athletic fields or courts.

If the community hires only one coach, and gives him only one field or court, the size of the squad is limited. The football coach who must win will have more than he can do in trying to train his starting club and the boys he expects to use as first team substitutes. The non-playing substitutes or squad members can get little attention. If a basketball coach has only one court for a total of eight

practice (clock) hours per week, he can do a much more efficient job with twenty men than he can with forty. If he has to give part of the court time to the girl's team, and part to the junior varsity, his teaching is further limited. Ten players shooting at one basket get only half as much practice, in the same amount of time, as five could get. The same statement is true of floor play, both defensive and offensive. Forty minutes of a scrimmage game in basketball divided among forty men means four games of ten minutes each in basketball, if the time is equally divided among the boys. If there is only the one floor, thirty men must be idle for thirty of the forty minutes. It is evident that a coach could produce a better interscholastic team under such conditions if he kept only the best twelve or fifteen men on his squad.

When such limiting conditions exist, coaches are accustomed to carry small squads, and carry no seniors except those who are regular players. The experience gained from being a member of the lower half of the squad is permitted only such boys as show promise of developing into usable players for the team of the following seasons.

In some sports such as track, larger squads may be carried without so much limitation in practice time per individual. Individual attention by the coach will of course decrease as the size of the squad increases. Baseball, golf, and tennis are sports in which facilities have a direct relation to possible squad size in schools where only certain hours are available for practice. There is a general feeling that golf and tennis require more individual instruction than other sports. If this hypothesis is correct, those squads are further limited in size.

Perhaps the skills in the other sports would profit greatly with time for more individual instruction. The coaches are so sure of this principle that they coax special boys out for individual instruction during extra periods, noon hours, and vacant week ends. Each boy has his own problems, makes his own peculiar type of errors, has his own special aptitudes. Each boy needs individual sports guidance if he is to progress rapidly in realizing his potentialities.

Discussion Questions

1. What eligibility plan would be easiest to sell to the P.-T.A.? To your colleagues at a faculty meeting?
2. Should the athlete be required to take a physical examination before the fall, winter, and spring sports if he plays all three in any one school year?
3. What are the best procedures to employ in obtaining parental consent for participation of their youngsters in interscholastic sports?
4. Would it be advisable to have height classifications in some sports similar to the weight classifications in wrestling and boxing? Would a combination of the two aspects for classification be more satisfactory?
5. Are above-average weights an advantage in non-contact games?
6. What types of speed are most subject to development?
7. Is mischievousness a good symptom on athletic squads?
8. With the modern platoon system in football, is the need for training habits (health habits with regard to eating, sleeping, smoking, etc.) diminishing?
9. Would you select for your squad a star athlete who has a history of being dishonest with athletic equipment?
10. What objection would you have to selecting squad (not team) members by competitive elimination in the individual sports?
11. Do boys vary a great deal in performance rank from contest to contest?
12. How do you decide whether or not to start a boy who is very good sometimes but fluctuates widely in performance level?
13. Should the coach or his assistants scrimmage against the squad?
14. Of a group of boys about the same size at fifteen or sixteen years of age, how would you predict those most likely to be the largest at maturity?
15. What facts in the boy's background, excluding health, would you like to know as an aid to selecting or rejecting him as a squad member?
16. Should academically dull boys be allowed to play high school sports?
17. At what age should a boy be permitted to try out for interschool sports? Do you mean physiological, mental, or chronological age?
18. How often per year should academic eligibility be readjusted to changing grades? Week by week? Sport season? Semester?
19. Should athletes have an additional health examination after a sick spell?

20. What is the purpose back of the school requirement of parental consent before interscholastic competition is permitted?
21. What is the coach's procedure if the parents will not permit a good, physically fit athlete to compete?
22. Does the coach tend to select boys somewhat because of the type of offense and defense he prefers?
23. In what ways is extra height an advantage in sports? A disadvantage?
24. How tall is the average man of today? The average athlete?
25. Why have professional basketball teams changed over almost entirely to the tall men? Is extra height a disadvantage in soccer?
26. In what positions is height necessary in football? What advantages has extra height in baseball and in what positions?
27. Does height tend to be better on offense or defense? (Comment per specific game.)
28. Why is the little man so popular with the crowds in sports?
29. Discuss the weight aspect in regard to gymnastic competition. Compare weight in gymnastics with weight in football, as a sports asset.
30. Is there any relationship between weight, endurance, and stamina?
31. Explain the difference between desirable speeds in gymnastics and desirable speeds in baseball. Does the track man need the same speeds as the football player? The handball player?
32. Is excess energy in a boy a great asset in sports?
33. Why should the coach see the boy under pressure before deciding about his ability?
34. Can anyone become an athlete if he wants to badly enough and starts in when he is young?
35. How much weight should the coach give the moral character of the player in squad selection?
36. If twice as many boys report for try-outs as can be carried on the squad, how much time will be needed for eliminating the lower half?
37. In what sports does present skill level have less weight for lower squad members (third or fourth team), as far as selection is concerned?
38. How does the coach estimate potentiality in a player when the athlete does not yet have skill?
39. What are some of the problems of having both scholarship (expense help) and non-scholarship men on the same team?
40. What factors would you put in a rating scale for a football player? A basketball player? A baseball player? A track man?

41. What is the major purpose of movies of a game? Should the boys attempt to analyze the movie?
42. How does one determine the best size of squad to carry?

Test Questions

1. Is one physical examination per year adequate for participation in high school athletics?
2. Should the physically fit athlete be urged to play athletic sports even if his parents object?
3. Might it be advisable to use weight and height classifications in sports for younger boys?
4. Is there any correlation between weight and ability in non-contact sports?
5. Can the speed with which one sees a curve ball be greatly increased (time necessary shortened) by practice?
6. In general, is mischievousness a bad symptom on athletic squads?
7. Does the modern platoon system in football make the observation of health habits, with regard to eating, sleeping, smoking, and so forth, less important?
8. Is it justifiable to fire all athletes who are dishonest in handling playing equipment?
9. Is the elimination tournament the best means of selecting one's squad in individual sports?
10. Do boys vary a great deal in rank in performance from contest to contest?
11. Is it preferable for the coach, or his assistant, never to scrimmage against the squad?
12. Is size of bony framework at fifteen a good indication of potential development for later years?
13. Should academically dull boys be allowed to play high school inter-scholastic sports?
14. Is physiological age usually the same as chronological age?
15. Is the week-by-week procedure the best for determining athletic eligibility?
16. Does the coach tend to select boys somewhat because of the type of offense or defense he (the coach) prefers?
17. Is height above average an advantage in soccer?

18. Is height above average an advantage in defensive backs in football?
19. Other things being equal, does the little man have greater crowd appeal—is he more popular with the spectators?
20. Is there any relationship between weight and stamina in baseball?
21. Are high speeds in gymnastics and high speeds in track basically the same speeds?
22. Is athletic success almost entirely dependent upon motivation, opportunity to learn, and years of practice?

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4

Planning for Practices and for Games

A liability on the field is an asset on the bench.

PRELIMINARY PROBLEMS

Ready to start. The coach's work begins long before the first day of practice. The experienced coach has his major planning for the entire season completed when his boys report for the first workout. Some of the equipment is already issued if possible and it is at least ready for prompt issue. Field or court arrangements are made so that there is no conflict of other types of activities with the sports practice periods. Laundry service, towel service, and janitorial service are prearranged. The clerical routines of checking on physical fitness certificates, eligibility records, parental permission blanks, and equipment issue receipts are either completed or set up in order to function promptly and efficiently.

Facility conflicts. Arrangements should be made in advance so that there is no conflict with other extracurricular activities such as marching drills by the student band and "pep squad." Practices must be arranged so that there is no conflict with other sports squads such as the girls' team and the junior varsity. There should be an understanding with the faculty, if possible, that reduces to a minimum afterschool sessions for special examinations, laboratory work, class plays, student government work, detention room assignment, and the like. Moreover, there may be temporary loss of the

use of facilities for sports because of public functions, registration days, student or community recreational activities, and dances. The coach should foresee such possibilities and readjust his practice time to best advantage for his teams. The assumption is that every coach will oppose, as much as is feasible and wise in his community, outside encroachments on his practice time with his squad.

Special student problems. In communities in which many students commute to school, or are brought in school busses, some plan should be made for those boys coming from a distance to get home after practice. The problem may also arise of how to get the boy home in time so that his mother will not have to prepare a second meal each evening. Mothers are very kind but a woman already overworked may have little extra time for the additional meal preparation. The boy may have to eat a cold meal or a pick-up snack inadequate for a vigorous, hardworking athlete. Some boys have paper routes, or chores to do before bedtime. The coach can not and certainly does not always want to eliminate these busy boys from his squad. Many of these working boys want to compete, and many are among the better of the athletes available in the particular school.

Planning for practices. The coach has made as accurate an evaluation of the type of material available as is possible: (1) from his knowledge of the veterans returning, (2) from the type of boy usually reporting at his particular school, and (3) from the data he has been able to gather about the new candidates for the squad and their suitability for various positions. This last bit of information may need to be re-checked rather carefully during the first three weeks of practice. Some adjustments of personnel for specific positions will need to be made later but the general plans are thought through. The coach knows what type of offense he is going to use and what defensive techniques. He has his basic strategy outlined. Modifications will be made as the material develops, and as he adjusts the details of his system to each opponent.

The coach draws up plans for the practice time available before the first contest. He plans how much of this time can be spent in conditioning work, how much must be spent in establishing skills

and team patterns, and how soon it is necessary to begin some scrimmage. There will be plans for a differentiation of work between the boys who report soft and flabby, the boys who report tired after a hard summer of labor, and the boys who report physically vigorous from some other sport squad or from preliminary conditioning done on their own. Even after much conditioning, the players will differ individually so that the amounts of work will need to be adjusted for each player. Some athletes need much more work than others. Some players need much more warm-up exercise than others. It is unwise to trust the boy's own judgment in determining the amount of work he needs. The enthusiastic boy tends to work too much and the phlegmatic boy not enough.

Practice time available and desirable. Coaches want from one to two hours of practice per school day for their men, depending somewhat on the size of the squad, the time of the season, and the proximity of the contest. Situations often occur in which some of the squad members report for practice at a different hour from the others. The coach wants the starting team to work together if possible, but he may work with other squads both before and after the regular workout of his starting team.

In most schools, the sports practice comes right after the close of the afternoon session. Some schools excuse, one hour earlier, those athletic squad members who have a study period the last hour of the regular school day. An excellent time for practice is from half past three to half past five. If the regular school day does not end until four o'clock, the sports practice is likely to extend so that the boys are made late for their evening meal. In many sections of the country, dusk falls before six o'clock in the evening in November and makes late practice difficult unless the field is lighted. Indoor sports can use the artificial lights but outdoor practice when the ball and the players are scarcely discernible has doubtful value. In colleges in which classes extend until five o'clock in the afternoon, lighted fields are necessary for late fall practice. Even in high school the coach needs some night practice under lights if his boys are going to play night games under lights. The players need a little acclimation to the difference in lighting.

Night practice. Basketball is the one sport that is most frequently practiced at night. Having the basketball team practice at night makes the court available after school for the many other demands on it like girls' team practices, intramurals, social functions, and the like. It is a little easier to administer the practice of boys at night than that of girls. The women directors usually prefer the afternoon for their program.

There are advantages and disadvantages to evening practice for the indoor sports. In general, there is less conflict for the practice area, provided the courts are not used in the community leagues or adult recreation programs. Those coaches who prefer private practices find it easier to obtain them in the evening. Some coaches think the night practice is better because it resembles more nearly the situation in which the games are played in that it is held under artificial lights and after the evening meal. There are even a few high school coaches who prefer the evening practice because it keeps their boys busy in the evening—hence, off the streets and out of trouble.

In college, night practices are often a necessity because of late afternoon classes. Two procedures are followed: (1) to practice between five and seven o'clock and eat afterwards, and (2) to eat the evening meal after classes and practice later. Some colleges with rigorous academic requirements begin their practice immediately after the evening meal, say at six fifteen or six thirty, then stop practice at eight fifteen or eight thirty. This practice schedule permits the boys to complete their late afternoon classes and have most of the evening for study. An examination of study habits of the college men seems to indicate that the hour or two immediately after the evening dinner is the time least commonly employed in study.

Observation of the eating habits of the boys under this system of practice-time indicates that they fall into the habit of eating a lighter evening dinner and of eating a little more some time before retiring. The boys report that a heavy meal just before practice makes them "look bad" in practice. The post-practice or bedtime snack does not seem to affect their physical condition deleteriously.

The three hours or more of study time, after completion of practice, permits them to do satisfactory work in the most strenuous curricula. However, if there are boys who wait on tables or wash dishes for part of their college expenses, the immediate post-dinner practice interferes with their work. They are almost always late for practice. In general, the boys in the difficult curricula are unable to do satisfactory academic work if they try to play sports on a varsity team and work for their board at the same time.

Basic considerations in determining practice hours. Before planning the practice time, the coach should determine: (1) what other demands will be made on his facilities, (2) what hours his boys will be available for practice, (3) what hours will be most suitable for the academic success of the boys, and (4) what hours are best suited to the outside duties and the home conditions of the boys. After weighing these four considerations, he must select a time that will permit him to do an efficient job of teaching the sport. Perhaps other demands on the facilities can be rearranged by conference with the administrator. If no practice time will suit commuting boys and boys who have afterschool duties, the coach may be forced to recommend that those particular boys satisfy their need for sports participation in the program of the noon recreation hour.

If the practice is well organized, one and one-half hours or less are adequate for the work of the men who are to be used in the contests. It is preferable to draw up in advance a work schedule to be posted on the bulletin board so that each boy knows what he is to do. In the individual sports, coaches often type and post on the bulletin board separate direction-sheets for the individual work programs in the various events. In all sports, there is need for some individual variation in the work assignment. The coach can either tell the boys individually of such modifications, or note it on their specific mimeographed work sheet.

The progress in condition, the nearness of the day of the contest with the outside team, the frequency of practices per week, and the peculiar nature of the boy vary the desirable length of practice for the individual and for the squad. The boys who are relative begin-

ners in the sport will be sore and stiff at first and may have a little foot trouble. These boys must be introduced to intense work gradually. As soon as they are ready for harder work, they must be subjected to it. One does not get into condition for sports without intense and arduous work. A tired body is normal after the practices of these conditioning stages. This type of fatigue is merely conducive to sound sleep. The body *increases* in endurance by working at its *maximum* for reasonably short periods per day, then resting until the next day. Only by working intensely can the body be trained to endure more, and to perform better.

Other activity demands on the athlete. The athlete may throw himself into a state of over-fatigue, even though the practices are not too strenuous, by lack of adequate rest and sleep, or by carrying on too many outside activities. Coaches have found upon investigation that some of their fatigued players were playing other sports, or other games in the same sport, outside of practice time. The coach ought to find out about his boys' activities outside the school environment and influence. Activities causing inability to endure a normal and needed amount of sports practice may be forced upon the boy. Those athletes who have to work part-time, and carry their school work in addition, may be getting too little rest and relaxation for the attainment of athletic fitness.

The loss of sleep is just as harmful to the boy's athletic efficiency whether it be caused by long hours of late studying or by midnight "bull sessions" at the fraternity house. In fact, the study might be worse, athletically speaking, for it is a greater nervous strain. Three hours of boning over an applied mathematics problem is more tiring to the average boy than the same amount of time spent in idle chatter.

One of the demands on successful athletes that greatly interferes with their work is the banquet fad. Alumni groups, Service clubs, Chamber of Commerce organizations, and even student groups want to fete the successful athletes. College athletes are often requested to attend high school banquets as guests or guest speakers. Many of these young men can not really spare this time from their academic work.

Winter sports often suffer from celebrations following the fall sport season, or from extension of the fall sport well into the winter season. Athletes may practice football until New Year's Day for a Bowl game. After their return from the Bowl game, the month of January is filled with banquets and other public affairs. The writer once had that situation with a few very promising basketball players coming out for the squad. They were able to attend only six practices before the examination lay-off of the last week of January. By that time, they were so far behind the rest of the squad in ability that it seemed advisable for them to give up basketball.

The extension of practices, and of other activities associated with the sport, have increased so much in the last few years that three-sport lettermen are becoming rare. Higher academic standards and increased subject matter mastery, required for graduation, make it necessary for many athletes to take one sport season off per year in order to catch up with laboratory work, term papers, and assigned supplementary reading. Moreover, the levels of achievement in the athletics of the leading colleges are so high that mere seasonal practice is inadequate for such attainment.

Achieving and maintaining fitness. It usually takes about six weeks of work for a team to round into shape. This length of time is based on the assumption that the boys have had previous athletic experience and did not let themselves get completely out of shape between seasons. Generally speaking, the peak of condition is not reached before the first contest. In football, for example, most coaches continue some scrimmage and considerable conditioning work almost to mid-season. From then on, the scrimmage is greatly reduced, except for that given to the substitutes, and the work schedule emphasizes skills and strategy, teamwork and timing, with just enough heavy work to preserve the condition. With a very hard schedule, the practice problem may be one of getting the necessary polish on skills and team techniques and yet saving as much energy as possible. The contests are so exhausting that the boys need time between games to build up extra energy reserves.

Those boys in sports in which games may have been scheduled as

often as three times per week need particular care. In a crowded schedule, the practice sessions must be very light. It is doubtful if high school or college basketball players should be permitted to play more than two games per week except against weaker opposition, or perhaps, in exceptional cases, after a week or more of no games and light work. The athletes may occasionally catch colds and thereby weaken bodies already trained down fine. They can ill afford the extra energy to fight off the cold. Sometimes such loss of stamina throws them "off their game" for much of the season. It is perhaps better for the coach in basketball to err, if at all, on the side of under-training.

Nine hard games are likely to drive the average football team into a lapse of efficiency some place from the middle to the end of the long grind. In many sections of the country rain and bad weather are likely to give the baseball or tennis team enough rest in the spring, so there is little danger of them having too many games. However, the baseball team must have an adequate pitching staff to play frequent games. Pitchers need three or four days' rest between assignments.

Number of games. In some sections, the school board or the public school league limits the number of games a team may play in any one sport each season. Rules vary from sport to sport concerning length of schedule permitted. Football, soccer, wrestling, boxing, gymnastics, hockey, track, and lacrosse are usually limited to one game per week with a total of six to eight major contests. Basketball averages about eighteen games although teams that enter state play-off championships may be expected to play more. Colleges may extend the number of contests in the various sports, depending somewhat on the athletic emphasis in the particular school. The coach without depth in reserves should be cautious about adding many additional games to his schedule.

On the other hand, too few games cause lapses in interest. A non-challenging schedule makes it difficult for the coach to develop his boys to the levels they should reach in that season. The vacation absences from practices are good examples of what a lapse in interest will do to sports condition and sports skill. The college

coaches have attempted to prevent this "let-down" by filling part of the vacation periods with practices, games, or both. Even necessary interruption of practice because of the semester examination period causes a loss now and then if opponents have not experienced the same absence from practice.

The amount of scrimmage. A few football coaches never scrimmage the starting team during the practice sessions from the conclusion of the first game to the end of the season. The more common practice is to loosen up, go over a few errors and polish a few techniques on Monday; have some contact for the heavy rugged men, particularly the linemen, on Tuesday; have a short, intense scrimmage on Wednesday; taper off the work on Thursday; and merely loosen the boys up with a little play and strategy review on Friday. Underweight boys, overtense boys, and light backs may be excused from part or all the contact work.

This schedule does not take into account the work of the non-playing squad members. They rested Saturday while the first team and substitutes were exerting themselves to the utmost. They need some hard work to make up for their idle day, Saturday. It is a mistake to assume that the non-playing members of the squad can develop skill and keep in trim with no more work than the playing members of the squad receive the rest of the week. Many of these less able squad members will develop if they have adequate work, but they get too far behind to be of any use when they are needed if they do not get some intense scrimmage. At best, it is difficult to have for them any practice scrimmage that resembles in fiery exertion the varsity's game experience.

Safety precautions in scrimmage. Contact work too early during the pre-season conditioning seems to be a frequent cause of injuries. Inadequate warming-up before participation is another causal factor. One error that some coaches make is that of scrimmaging the same boys too long when they do not perform certain patterns satisfactorily. The coach may be trying very hard to perfect a type of play. The boys work hard but begin to become tired and consequently perform less proficiently. The coach drives them longer and harder to try to correct their performance and

the boys do even worse because of increasing fatigue. The work may continue until the boys exhaust some of the reserve energy that they should save for the next contest, or until someone gets hurt.

The safety factor is an important factor to consider in determining the length of scrimmage. The tired boy seems to be more susceptible to injury. Prevention of injuries in practice may save many a game. Coaches who are careful to remove dangerous hazards from play and from play areas lose fewer games. They have fewer games in which certain important starting men are benched because of injury. Some injuries will occur in spite of all precautions but safety planning in advance keeps such injuries to a minimum. Insistence on the wearing of protective equipment, extra support by tape of any weak joint, and special attention to degree of fatigue are examples of such precautions. Boys in action who begin to show signs of fatigue are removed at once. Boys showing the least sign of injury are examined and rested if their fitness is uncertain. A few coaches fear that such precaution encourages malingering. Perhaps it does, but the malingerer might as well be taken out anyway. He is not made of the stuff for athletic greatness.

Championship training a matter of years. Conditions vary so greatly that no general statement can be made about how long the coach needs to train his team for endurance and stamina. He will still be working at improving skills and techniques the last week of the season. Football may have four to six weeks of spring practice followed by a month of practice before the first game in the fall. Track may include summer meets, cross country meets in the fall, indoor meets in the winter, and then spring track. Tennis and golf are very likely to be played all the months of the year that the weather permits. Some basketball teams have no practice until the month of November, but others play in basketball leagues during the summer on lighted outdoor courts, then begin practice with the opening of school in the fall. Many baseball boys play on non-school teams all summer, and a few schools have some fall games.

The pitchers and catchers usually start to work out about the first of February.

The good athlete nowadays seems to be the boy who is in some sport most of the year. He may stick to the same sport or he may change sports with the seasons. Usually the champion athletes are those who not only work at sports most of the months of the year but also have worked many years in succession. It might almost be said that a champion is one who has worked so long and so continuously at sports that he has *grown and matured* into a champion. The growth and maturity imply a high level of physical development, a great keenness of mental maturity, and a degree of self-drive and emotional control that mark him as superior. He has the muscular and organic development, the skills, the techniques and strategy, and the control and drive that keep him centered on his objective and extract the utmost of his energies for its attainment.

The mature champion knows how to take care of himself. He loves to win but he gets in shape instead of worrying. He knows how to relax. He takes his time in the dressing room, warms up slowly and completely. He cools off slowly after a contest. He does not let overexcitement fatigue him and decrease his efficiency. In early season, he gets very tired but he does not confuse such fatigue with staleness. He goes home after his practice, "sleeps the clock around," and reports in better shape the next day. He needs no coach to teach him the value of "bunk fatigue."

Problem of months and years of practice time. No adequate data are available on which to base judgment about how early in life a youngster should begin formal practice of a sport. The coach prefers that the boy *play* at his sport in the years preceding membership on the interschool squad. This preliminary practice develops body-control skills and skills specific to the sport. The coach does not want the boy injured, whether it be from hard contact games before the joints are able to withstand the shock, or from throwing fast balls before the pitching arm is ready. Herein lies the coach's argument for supervision of competitive team

games of youngsters—for protective reasons. There is also the possibility that too much formal drill at an early age will take the fun out of the game for the boy and rob him of his desire to serve on interschool teams as he grows older.

The problem of how much of the year the boy should be permitted to practice a sport concerns many school men. The coach can avoid the problem of too great concentration (if such is the objection) by suggesting to the boy that he participate in a variety of sports. The coach who is interested in stimulating the very young boys to develop into athletes will see that balls, gloves, backboards and baskets, goal posts and nets, play courts and fields are available. He will urge the town recreation groups to foster games and sports. He will give the embryonic athletes a word of encouragement whenever possible.

There is a certain justice in boyhood sports that should be preserved: that a boy can come from nothing, athletically speaking, to a fair player, capable of gaining some prestige among his school-mates, in twelve successive months of rather frequent practice. All he needs at this early age is the opportunity to work at the sport and the inner persistent urge to excel. The opportunity for this *voluntary* achievement should be constantly available for all youngsters who dream dreams and work to make them come true. The evil that the school men fear creeps in when adult encouragement turns into adult pressure to keep the young boys practicing a sport most of the year, regardless of the boys' own preferences.

The enjoyment factor in out-of-season practice. If the coach is having out-of-season practice, he should emphasize first that it be enjoyable to the youngsters who like the game. Enjoyment means fewer practices, perhaps not more than three per week. It means frequent short scrimmages that are stopped before the boys get too tired. New plays, new ideas, and new techniques that catch the interest of the boys may be introduced. What drill is desirable should be built into some form of enjoyable "lead-up" game. Soccer volleyball as advocated by Mr. Jeffrey¹ is an excellent ex-

¹ Bill Jeffrey, *"The Boys with the Educated Feet" Association (Soccer) Football*, rev. ed. Minneapolis: Burgess Publishing Company, 1948, pp. 12-13.

ample of ball-handling skills wrapped up in a delightful game. Mr. Jeffrey's enthusiastic play on the side of the weaker boys against the better boys adds a lot to the fun. He introduces by example such a variety of uses of the head and the feet that the boys are challenged to imitate him. Coaches have many such games; for example, "pepper" in baseball, "three-on-three" in half-court basketball, and "the circus" in gymnastics.

Offense and defense planning. Basic considerations in planning one's offense and defense include the type of boy available, the depth of the reserves, the type and style of opponents, the amount of teaching time available, the number of games, the careful scouting of opponents, and the scouting of one's own team by opponents. The small, fast football team will have to stress open work, spread lines, forward passes, and offensive football. They can not expect to hold opponents scoreless and win by a 7-0 score. The small basketball team will be weak on rebounding and on blocking close shots by the opponents, so they will probably play a pressing defense and a fast-break offense, or a ball-possession type of game as soon as they get in the lead. If the coach's players are very mediocre in shooting, they will need to stress defense. Their only hope of winning is to hold the opponents' score low enough so that they can match it.

The weak-hitting team in baseball will stress tight defense, bunting, base stealing, squeeze plays, and the like. The heavy-hitting team with the weaker defense will do less sacrificing, and will not be so likely to play for the one run. The short tennis player will stress base line position and placement. The tall tennis player will stress net play and the volley. The offensively weak soccer team may play three fullbacks to hold the score low enough so that they may have a chance.

The depth of reserves determines the efficiency of the plan for frequent substitution or, more so, the use of the platoon system. The style of the opponents is usually the one *not* to use when playing against them. They understand their own system best and can work best defensively against it. They have had much opportunity in scrimmage to detect its weaknesses. There are exceptions to this

rule; for example, some fast-breaking basketball teams are weak on defense against fast break. They have practiced running furiously toward the offensive end of the floor on fast breaks, then jogging back on defense. The defense is not as much fun so they have not thrown themselves into it as wholeheartedly.

In general, the basketball team that relies on fast break for most of its offense is less effective against the deliberate ball-control type of game. Boys, by practice, get into habit rates of speed at which they function best. When they are forced to play faster, or slower, by the opponents, they are less effective. Even in golf, the game of an opponent seems to be affected adversely if he is hurried along, or slowed down much below his usual pace. The younger golfer is likely to hurry his older opponent along, and vice versa.

The coach must plan his system in terms of how much teaching time is available. Plays must have adequate time to become habits. If the offense is too complex to be automatized in the available time, it should be simplified. Simple things well-learned are better than complex things done poorly. This principle applies to number and complexity of football plays, basketball plays, wrestling holds and escapes, court tactics in tennis, offensive maneuvers in boxing, and so on. The principle does not mean that more complex and deceiving plays would not be valuable if they were well learned. The famous old champion Chicago Bears football team was said to have hundreds of football plays that they used in one season. Variety of attack is a very valuable asset if it is *effective* variety. Without a variety, opponent's scouts will be able to invent defense modifications to checkmate one's offense. But an unlearned offense, an offense so complex that it never functions with habit precision, needs no special defense to checkmate it. The young coach with his head full of patterns of winning plays is likely to confuse his own boys with "too much stuff."

The number of hard games on one's schedule determines to a considerable degree the expansion of offenses and defenses. If the games are almost all difficult games, much time must be spent in getting defenses ready. Opponents' strongest scoring threats must be imitated in practice and their techniques practiced against by

the first team. If the opponents have special defenses, one's offense must be polished against such defenses. Scouting notes indicate specific preparation needed to meet specific types of play. An occasional new play or new variation in an old one can be added for the purpose of deception or of attacking a special weakness of an opponent. Different maneuvers on the defense may be practiced. However, the basic offensive and defensive patterns of a team can not be changed from week to week—merely the patterns to be emphasized. The system itself, if it is basically sound, gets stronger as the season progresses, stronger despite the scouting. The timing gets more exact, the footwork becomes automatic, team members work together more effectively, the precision of habit performance becomes more rapid than the action of opponents who must hesitate until the offense starts its maneuver.

Basis for the coach's preferences in offense and defense. The young coach generally begins his first year of coaching by using the offensive and defensive systems that he played in college. He knows the details of these systems adequately enough to teach them. He gains experience, meets new systems, and sees new techniques. He has some of his own ideas fail with his boys, and he gets a couple of "good lickings." Then he begins to do his own thinking, stands on his own feet, and readjusts his system to his own boys and the type of opposition at that level.

As the years go by, he gains experience with different types of boys and learns to plan his attack and defense in order to take advantage of the boys' particular strong points. A football offense may be built around a strong open-field runner who needs only "to get his nose out in the open." The coach fashions a partially spread line with some cross-blocking, and stresses clearing out the first line of defense. Zupke's old formation for Red Grange is an example. A basketball offense may be built around a great offensive rebounder. The boys can afford to shoot long frequently because of the rebound scoring. Another offense may be built around a peculiar type of set-shooter. The pattern may be to work the ball around until it can be gotten to an inside-post man, then, as the defense fades back, passed outside for the set-

shooter's specialty. The double inside-post attack seems to be based chiefly on two types of abilities: fair outside set-shots, and big offensive-rebound men playing near the backboard.

Scouting notes will often reveal possibilities of special offenses against particular opponents. A relatively short backfield man in football rarely makes a good defensive man against forward passes. A high scoring basketball opponent may be so anxious to get away on the offense that he is weak defensively. A young fast-ball pitcher may follow through so far that he is susceptible to the bunting game, or he may lack control and be beaten by a team that "waits him out." A tall net-man in tennis may be weak on going back for lobs to the left near the baseline, or he may be very clumsy on returning a ball driven toward his feet as he rushes the net.

The coach plans in terms of type of opposition, and teaches in terms of major errors revealed by his observation of the play of his boys in the game. He begins to make up the content of his teaching from his data charts on his team's play, from his analysis of their play as shown in movies, and from scouting notes recorded while observing his next opponent.

Schedules and suitable adjustments. When the coach has an average schedule of games with a couple that are especially difficult, he plans and drills between contests only for the next contest, but in doing this he points his conditioning, his play perfection, and his strategy toward the two crucial games. If his team is overmatched in the schedule so that he can not expect to win a high percentage of the games, the coach gathers all the data from scouting notes, previous year's regulars returning, record against other teams, and the like, of his opponents; then he estimates the games in which he has a good chance to win and puts all his extra efforts in getting his team at its best for these particular games. He does not plan for his boys to achieve the impossible, and he does not drive them furiously in an attempt to defeat far superior opponents. Trying one's hardest, only to be soundly trounced, is too severe a shock to conscientious, grimly determined but overmatched boys. It deprives them of a degree of confidence and a faith in their progress

—a confidence and faith that they will need badly to win those games in which they meet opposition not so extremely superior.

The coach will win more games in the above-mentioned type of schedules with too difficult opposition if he is quite honest with his boys about their chances of winning. He should show them what data he has collected on the opponents and explain exactly what the chances of winning seem to be. The boys will then try harder to win those games in which the odds are not too great, and undertake the playing of those games almost impossible to win as a challenging learning experience. In the rugged learning experience, they will test themselves to see just what improvements they can make in their own play.

In this saner frame of mind, the boys are not too heartbroken to recover after defeat. They are ready to win from equal opponents and to upset, once in a while, those only a little superior. Without the tremendous pressure of being expected to win, the stimulus of meeting an opponent with a great reputation may react quite favorably on team performance. With this approach and this spirit, there are times when the boys achieve unexpected successes over superior but over-confident opponents.

If the coach's schedule includes too great a number of superior opponents, he should try to have it modified before another season. No good coach wants to work under conditions where he can not win half his games even with his own and the team's utmost efforts.

When the schedule is made up of hard games, none of which seem beyond reason to win, but most or all of which are very difficult contests—league games, for example, in an evenly matched league—the coach should plan and prepare for only one game at a time. He should prepare for each game as it comes and try to get it on the books in the win column. Once a game is in the record books, he can forget it, except for its lessons, and begin immediate preparation for the next game. Sacrificing one game in order to be more likely to win a later one is considered by many coaches to be a poor gamble. They think that the coach who plans this way is taking a great chance of losing both games. The exception

occurs when it is best for a good player's welfare to keep him out of a game until he has time to get stronger after a sickness or injury. Even in this case, the substitute is frequently better than the regular who is not quite as fit as he should be for best performance.

High school boys seem to improve greatly from one year to the next. A young team that has gone through a rather disastrous season and lost most of its games may have learned a great deal. If most of the same players return the next year, they may become a great team. The additional year of age, the long, hard seasoning of the preceding year, and the lessons stamped in by the defeats, sometimes combine to produce in them a championship team.

When drawing up the schedule, the coach usually wants relatively easy opening games if he has a green and inexperienced team. The ideal schedule permits a team to meet its real tests after its skills and techniques have been polished against somewhat easier opposition. Nowadays coaches can not insist on this advantage. The weaker teams want to play in their own league where they have a chance to win the opening games also. Occasionally they are persuaded to play the superior opponent by a substantially larger guarantee. Many coaches do not want to win the opening game too easily. They may have an experienced team which they hope to carry along to a great record. They prefer to have their teams tested early in the season so that the mistakes will show up. Mistakes are not apparent against easy opposition. If these weaknesses can be discovered early in the season, there is time to correct them before the major contests occur. Of course, the coaches do not want this first contest to be so difficult that their boys fail in the first "public examination."

Vacation athletic trips. In some sports the coaches like to take a trip in which their boys play several games as a kind of conditioning and seasoning experience. These trips are usually scheduled before the regular league games begin, or during a vacation period like Christmas or Easter. A basketball team may make a trip over the Christmas vacation in which it plays several games, or a baseball team may make a trip south during the spring vacation to

play where the weather is warmer. The traveling teams may play almost daily.

If the boys do not return from the trip overfatigued, this plan seems worth-while in colleges. Of course, it is difficult to win all the games on the road. The team very often starts the post-vacation play with a few scores in the "loss column." But it is difficult, in fact almost unknown, for a college basketball team to go through a major schedule of play without suffering a loss. Most coaches prefer a defeat early in the season to a defeat later. Columbia's basketball team went undefeated through its regular season in the winter of 1951, but lost out early in the post-season play-offs. Even so, this record of a season without defeat was a remarkable exception.

There have been a few cases in which a rather good team has taken a long, strenuous road trip, and has come home tired but faced with the necessity of playing strong opponents quite soon. Such a team has lost the contests and, once it started to lose, seemed to find it very difficult to recover its winning ways with the result that what might have been a winning season turned into a very mediocre one. The coach should keep this possibility in mind in scheduling games for a road trip. Too many games and too much travel, particularly in winter, may undo the very purpose of the trip. If the trip is a matter of furnishing a form of entertainment for the boys, and the scores are unimportant, that is another matter. It is a little difficult to imagine a coach taking a ball club out on the road solely for the purpose of entertaining them. The old coach takes the visiting team on a sightseeing hike while his own team is back at their rooms resting for the game. Many a club has lost the ball game on the sidewalks during a pre-game sightseeing tour.

Contests on the road are very hard to win and most young boys are not good travelers. The travel, the novel surroundings, the crowds, and the contests on strange fields or courts key up the young athlete. He can stand only so much tension before he begins to show signs of inability to relax and to sleep. The boy

begins to lose his fine edge of condition, and in the contest the squad in the best condition will win, other things being equal. It takes the most meticulous attention to all details of mental and physical condition to keep the boys at a high level of efficiency on the road.

In basketball, boys seem to be able to play two hard games successively without slowing up even though the intervening sleep was insufficient. A third night of play in succession is very likely to reveal less efficient performance. In general, there tends to be a let-down after a trip.

Traveling precautions. When it is necessary for a coach to take his athletic squad out on the road, all details should be planned ahead of time. Good hotels and good eating places are the first consideration. All arrangements possible should be made before the squad leaves home. "All arrangements possible" should be taken literally. It is painstaking attention to detail that distinguishes the great coach from the mediocre coach. Just to illustrate the nature of road-trip preparation, a number of suggested procedures will be listed.

Transportation should be as safe as possible, as comfortable as possible, and as relaxing as possible. Travel insurance should be carried on the boys, and on the drivers of cars when private cars are used. Drivers are responsible in case of accident but can be covered by insurance for about twenty-five cents per day, per person. It is better if the entire squad can travel together under the supervision of the coach in some form of public conveyance. Private cars tend to separate the boys, cliques develop instead of squad unity, and many of the squad are, of necessity, unsupervised. If the travel is done by car or bus, the coach should tell the driver the rate of speed preferred. High speed driving is not at all restful for the boys.

Who makes the trip? The coach, the trainer, and the managers make out a list of everything they will need on the road, then check items off carefully as they pack. Nothing is carried that is not needed, even players, or fans from the faculty. One of the hardest decisions that the coach has to make is that he must

leave injured players, and all substitutes who will be of no value in the contest, at home. Cripples and sick people are not good for the morale of the squad, even if they are fine boys and good athletes when normal. Carrying useless substitutes creates an entirely wrong impression of the purpose of the trip, and of the standards of behavior necessary. Substitutes who know they will not play, but are merely along for the trip, tend to have a light, frolicsome "picnic" attitude that may infect the rest of the group; and the interschool games are no "picnic."

Travel behavior. The coach talks over with his boys the impressions they make on the public. Young athletes, inexperienced in travel, may become loud, boisterous, or noisy when they are together on trains, in hotels, or in the theatre. On the other hand, some of the famous traveling college clubs of recent years have aroused much favorable comment and admiration from the general public by their quiet, gentlemanly, and dignified demeanor. The coach handling a bunch of youngsters can give them some very personal advice without offending: for example, the advisability of wearing a coat and tie, the complete taboo of any profanity in public, hints concerning table manners and food quantity, and consideration for fellow passengers. The coach can explain to them that because they are not private individuals, but a group representing the school, they are under observation by the general public and are responsible to the school for the impressions they create.

One famous coach was accustomed to tell his group, before they started out on their first trip of the season, that most of his men were gentlemen, and also that he would appreciate it if those who were not, would pretend to be gentlemen until they got back home. Then he would mention a gentleman's attitude toward "collecting souvenirs" from locker rooms and hotels on the trip. He would mention some of the niceties of table etiquette. He always concluded by saying, "You may be sure that the one who growls the most at the hotel service and food is the one who never fared so well at home."

Trip time schedule. Coaches find it convenient to draw up

an hour-by-hour plan for squad sleeping, eating, rest, recreation, travel, dressing, sessions with the trainer, chalk talks, and contests. Usually the trips are planned so that the boys arrive in the town a relatively short time before the contest. For a short, non-tiring trip, many coaches want only about ninety minutes from the time they arrive until game time. Some coaches want even less. The manager goes early to locate the dressing room and to have everything in readiness.

The boys rest better at home in their own beds than they do on the road. This matter of sleeping in their own beds is such an advantage that many teams are now traveling by plane or even train on the very day of the game, in preference to going earlier. Late arrival has the additional advantage of protecting the boys from press reporters and photographers, alumni, radio sports reporters, and the like. The coach must cooperate within reason with the press and the promoters at the time of big public contests. Cooperation does not imply tiring out the boys, upsetting them, or inflating them until they fizzle out in competition.

Treatment of the press. The press will have its say, and always the last word. The problem of handling public information is more difficult in cities where there are rival newspapers. Each reporter is anxious to get a scoop and irked if a special story is given to another paper. The coach can not afford to antagonize either newspaper reporters or radio broadcasters. Both can be of great help in motivating the players. It pays to give broadcasters and reporters such details of the game as the coach can afford to reveal without aiding his future opponents. In many cases, the game charts, the data sheets on individual play, even the movie analysis summary may be revealed to a sports reporter in the smaller community. The local journalist is more likely to be friendly if he understands just what is going on, and is on the "inside." The coach in the larger cities may need a special faculty man assigned to help him with newspaper contacts.

Limitation of visitors. Coaches are accustomed to stay rather close to their boys the day of a game. The boys seem to need protection from friends, well-wishers, "comp bums," and non-con-

scientious squad members. The coach likes to supervise the meals, and drop in on the boys during rest periods. A poker game is not restful. Sometimes the coach takes the team in a body to some light and relaxing movie, or some vaudeville. When the team arrives in town the night before the game, some such arrangement is much better than that of turning the boys loose to roam as they please. It is better not to overestimate the maturity of the athlete in regard to his sense of responsibility. More likely than not he is just the mischievous tike of the school room, grown up *physically*.

Discipline on trips. If there are a few "bad" boys among the larger squads, the coach will need to recondition them to approved social and healthful behavior. Stern discipline may be necessary to prevent their behavior from having a bad influence on the rest of the boys. If the so-called bad boys do not show promise of rapid reformation, they should be taken on no more trips, and perhaps even dropped from the squad. The beginning coach soon learns the advisability of seeing the boys to their rooms the night before the game (on trips), and making sure that they become quiet. If he suspects a few culprits, it may be advisable to sit in the lobby to be certain that they do not sneak out for further fun-seeking. The preventive type of discipline is best. As many opportunities for misbehavior as possible should be eliminated. Often a mature player may serve as roommate for a doubtful case, and, by sane influence, keep discipline problems from arising.

THE DAY OF THE GAME

Game day: eating, rest period, trainer care. The game day spent entirely on the road takes careful planning. Most coaches like to get their boys up fairly early for a good breakfast. What other meals are eaten and the time of eating varies so much that no rules can be set down. The giants of basketball have been found to play much better if they have a meal that would make an ordinary boy sluggish. On the other hand, some Olympic gymnasts never eat on the day of a contest until after the contest is over. The eating most suitable for athletic performance seems to be, to a great degree, an individual matter. The young high school boy may

have a tendency to overeat. Some boys seem to be made more hungry by the excitement and nervousness. They will turn up at lunch, after a hearty breakfast less than three hours previously, apparently famished—in spite of a relatively inactive morning.

Some coaches feed their boys sugar pills between halves or immediately before the contest. The value of such practice has not been established. Fall game coaches often serve the boys hot broth or hot tea between halves if the weather is very cold. If such practices make the boys feel better, there seems to be no reason for objecting to them. Otherwise, eating is limited to mealtime and to the foods prescribed by the coach. Pop, chocolate bars, peanuts, and candy between meals are disapproved. After the night contest, the boys are usually fed again, even though they may already have had two meals in addition to the pre-game lunch. The quantity of this late night meal is often limited lest the boy eat so much that he is unable to sleep after retiring.

Traveling teams frequently carry water with them lest strange water upset them. Another practice is to have the boys drink only boiled water, Coca Cola, coffee, tea, or pasteurized milk—any liquid that does not have the particular chemicals of the water in the strange community. There is good reason to avoid drinking "raw milk" at the occasional stops along the road. There is also a sound basis for scanning any eating place along the highway very carefully before taking the ball club in to eat. Hot tea as a substitute for water on these road stops protects the boys from bad water. The water in tea has been boiled, hence is harmless.

Feeding the boys not less than three or four hours before a contest seems to be traditional in many sports. A great many athletes eat relatively lightly the day of the contest. The very big men, particularly in the team games, seem to do as well or better when fed a substantial, though not heavy, meal. It is traditional in some sports (not established scientifically as valuable) to limit the athlete to an extremely small amount of liquids the day of the contest. No food that is at all "soggy" is permitted. Until evidence to the contrary is produced, this "drying out" process may be worth a try. The absence of all liquid is supposed to make one lighter on his

feet, more alert, and less quickly fatigued. The drying out process is commonest in the field of boxing.

Coaches have found it to be some advantage to assign roommates instead of letting the boys select whomever they wish. Boys who are a good influence on each other, who should be "buddies" in the game and thus need this additional opportunity to develop friendship, are placed together. Sometimes a veteran is put with a young but promising recruit to settle the youngster down and give him encouragement. The mischief makers are kept as far apart as possible. If there is a boy who needs particular watching, the coach should put him in a room next to his own. In general, varsity men should room with varsity men, and substitutes with substitutes.

An hour or two of rest before going to the area of the contest is a common practice of athletic teams. Most athletes lie down to rest and many prefer to sleep for a while. Some probably toss and worry about the approaching contest. The practice of taking this pre-game rest is so nearly universal that it would seem to have value. Some of the world's great heavyweight boxers have insisted on lying around the whole day of their championship match. The theory is that energy is saved and stored that helps the athlete through the fatiguing contest.

The coach should protect the boys from interruption during this rest period. Students will be calling them by telephone or going to their rooms to ask for passes, or just to share part of the reflected glory. The coach usually finds it advantageous to stop all telephone calls at the hotel switchboard, both those from and those to the boys' rooms. Emergency calls are cleared through the coach's room. Even parents must be denied the privilege of using this part of the school athletic trip as a chance for a visiting day with their boy. The school is not sending the boy out on the road to visit his parents.

What taping is to be done should be done in the morning of an afternoon contest to prevent last minute rushing. If the contest is an evening affair, the taping may be done during the rest hour following the pre-game meal. During this time, the manager can

arrange whatever details he is responsible for in the way of having taxis ready, arranging for distribution of complimentary tickets or team admission passes, making sure where the dressing room is and that it will be ready, checking the baggage to see that it is marked with return addresses, and even noting the taxi license, or porter's number, when he turns over the baggage.

Acclimation to strange fields and courts. Many coaches like to have their teams work out a day in advance on the strange field or court. Golf coaches want their boys to play a round. Tennis players need to adjust to unknown court surfaces, width of boundaries, and the particular backgrounds. Cross country teams want to go over the course. Basketball teams want to adjust their distance and direction judgment to the strange court backgrounds. The soccer players like to try out the unknown slopes of a field that may affect their ball handling. Even the baseball players want to size up the "short fields" to see what the dangers of home run hitting are. They may even get a little practice in playing a hit off the outfield wall so as to hold a runner to a minimum number of bases. The players will want to know how much time they have to warm up, what special ground rules are used, and the like.

The game plan is well worked out and practiced before the contest. The coach has also thought through carefully which men he expects to use, perhaps changing them in some games when the play changes from offense to defense. In sports where substitution is customary, it is well to have planned in advance exactly which substitution to use in each eventuality. Where good reserves are plentiful, this preparation may not be quite so important. When reserves are scarce, carefully planned substitution may win the game.

The coach will plan to gather as much information as he can while the game is going on. He will then be ready to make suitable corrections, or give valuable advice between halves. It is a good idea to have some understood system of seating the boys during the game and between halves. With such a system, valuable seconds are not wasted looking around for the man desired. Besides, if men playing the same position sit together, advice or specific

position play will not have to be given more than once, or told to all the rest of the squad.

Between halves. The trainer should be ready by the time the first half of a team game is over, to carry out immediately any needed bandaging or taping of the boys who just came out of the game. The period between halves must be carefully organized to take advantage of the shortness of time. Privacy and comfort for the boys should be assured. Blankets should be available for the boys to use for resting if they so desire. Boys may be refreshed by having hot faces and necks mopped by a cool towel. Sugar, ammonia capsules for inhaling, half an orange, or whatever the coach wants the boys to have, should be ready.

Post-game plans. Plans should be made in advance to get the boys home as soon after the game as is feasible. If the boys have done well, the coach should congratulate them, but he must not let his elation make him forget that the season is not over. If it should happen that the team lost and that some boy did very badly through over-tenseness or nervous excitement, that boy may need protection from "riding" by the public. The boy feels badly enough and any more criticism may cause the same nervousness and over-tenseness to transfer to his play in the next game. Any coach criticism, if necessary, may well be postponed until the next practice, and seasoned with enough personal kindness and humor to make it remedial aid rather than a form of punishment.

The coach must not let his worries about a contest affect his discipline. Some boys will ask for privileges when they think they have the coach "on the spot." The coach must learn to say "no" in any circumstances if his judgment of what is best for the squad indicates "no" as the answer. The same principle applies before a game, after a very disappointing loss, and after a very gratifying win.

Discussion Questions

1. Should the school athletic facilities be made available to the community for its recreation program?
2. When only one practice court, or field, is available for both the boys and the girls, how should the practice time be divided?

3. What type of plan would you suggest for athletic participation by the commuting students?

4. Should the coach change his basic system to fit his material?

5. Should all boys be given the same program of conditioning during the first two weeks of practice?

6. Should it be left to the boys' judgment as to when they should cease practicing?

7. Would you be able to justify three hours of practice per day?

8. Is night practice undesirable in schools?

9. What are the advantages of private practice?

10. Is it usually harmful for the young athlete to eat a bedtime "snack"?

11. What factors are considered in deciding upon the time for daily practice?

12. May studying interfere with one's athletic fitness?

13. How long does it take to get in shape for a sport?

14. How does the coach decide on the amount of scrimmage to give his boys?

15. How many games should the respective sports schedules include per season?

16. How many basketball, tennis, golf, or baseball games would be satisfactory for the high school team to play in one week?

17. What is the minimum number of games in the respective sports that the coach should accept as a satisfactory schedule?

18. Should the substitutes be given more practice scrimmage than the varsity team?

19. To what months of the year should athletic squad practice be limited?

20. How early in life should the boy begin formal training for sports?

21. How do you determine what offensive system to use? What defensive system?

22. Will you use the same program of conditioning on your squad if you use the platoon system as you would if you did not?

23. In what aspects of sports may slow play be more effective than rapid play?

24. Should one change his basic system during the season because of the careful scouting of his team by opponents?

25. Is it occasionally advisable to permit one's team to "let down," even if they are defeated, in order to win a later game?

26. Might easy opening games be conducive to later losses?
27. What are the advantages of spending the vacations of the winter and spring season in playing games on the road? The disadvantages?
28. What factors make it so difficult to win away from home?
29. To what extent should the athletes be free from supervision on trips away from the school?
30. When funds are available, is it usually advisable to take the whole squad on the athletic trips?
31. Is it usually better to arrive at the scene of the game a day or two before the contest?
32. When might it be advisable to take non-coaching faculty members on trips with the athletic squad?
33. How should one go about determining when and what to feed his athletes the day of the contest?
34. What nourishment, if any, is advisable between halves? During rest periods in track, tennis, or golf?
35. What is the basis for the "drying out" tradition?
36. Should boys be permitted to choose their own roommates on trips?
37. Is there any danger that the pre-contest siesta will make the players sluggish?
38. Of how much value is a preceding day's workout on the opponent's field, or court?
39. What should be done to and with the boys between halves?
40. Should the boys be left "on their own" after the game, until time to report to the place of departure for home?

Test Questions

1. Should the coach willingly decrease his needed varsity practices in order to provide for adult programs of community recreation?
2. Should all boys be given the same program of conditioning during the first few weeks of practice?
3. Should it be left to the boys' judgment as to when they should cease practicing, per session?
4. Should each boy have about three hours of practice per day?
5. Are private practices frequently an advantage?
6. Is it usually harmful for the young athlete to eat a bedtime "snack"?
7. May studying interfere with one's athletic fitness?

8. Should the amount of scrimmage be held constant for each week of the season?

9. In general, is a basketball schedule of twelve games adequate for high school teams?

10. In general, is a football schedule of five games adequate for a high school team?

11. Is it always unwise to schedule more than one contest per week in any school sport?

12. After the season begins, should the substitutes be given more scrimmage than the starting team?

13. Should the practice of an athletic sport be limited to a maximum of three months per year?

14. Is it definitely established that no athlete should begin formal sports practice before he is of junior high school age?

15. In team-game strategy, is slow play always less effective than fast play?

16. For best teaching, should the opening game of the season be an easy win?

17. Is possible usefulness in the game the chief criterion for determining the size of the traveling squad?

18. Is it usually better to arrive at the scene of the game a day or two before the contest?

19. Should extra faculty members and cheer leaders be carried along with the squad whenever space and transportation budget permit?

20. Is it advisable to forget training regimens and conduct regulations the evening after a game?

21. Might it be advisable for the coach to assign the particular room-mates for certain squad members?

22. Is it just as easy for the good team to win on the road as at home?

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5

Teaching Sports

For boys are like apes, and love to imitate whatever they see, whether good or bad, even though not bidden to do so; and on this account they learn to imitate before they learn to use their minds.

COMENIUS, *The Great Didactic*, p. 186, in Keatinge Trans., McGraw-Hill, 1931.

CHILDREN IN SPORTS

Very early in life, the child learns to run, to climb, to kick, to throw, and to ride on various types of play apparatus—all motor skills. What the adult tends to overlook is that he learns sports in much the same trial-and-error, non-analytical manner. The child likes to play with a ball or a club, or to chase the cat. He is continuing his learning of the basic movement patterns of sports. If he grows to adolescence in an atmosphere of playgrounds, physical education at school, and sports, he learns to throw and to catch, to strike, to jump, to run quickly with change of direction, and to wrestle. He learns these activities by imitative play in a social environment that encourages such forms of sports expression.

Children can learn sports at a very early age. Some have learned to swim almost as early as they have learned to walk. Many are quite adept and a few have been champions in their "teens." It is not uncommon for pre-school children to acquire great facility in swimming or skating. Many grade school children play competitive games in the same sports that are so common with adults. The midget baseball league that started in Williamsport, Pa., has

spread throughout the nation. The press release quoted below indicates its nature and extent.

WILLIAMSPORT HOST TO MIDGET PLAYOFFS

WILLIAMSPORT, PA., March 4—(AP)—For the fourth straight year, Williamsport will be host to baseball's little league world series Aug. 23-26.

Carl E. Stotz, national commissioner of the small fry diamond organization, said 2,000 teams in 37 states will compete for places in this year's tourney. Last year there were 900 teams in 22 states.

Little League Baseball, Inc., opened its headquarters here last week to direct the program for boys from 8 to 12 years old.¹

Town recreation groups often promote sports contests for elementary school children. Some sections of the United States have football leagues for these younger children. Recreation directors in some of the cities of eastern United States have placed great emphasis in their program on competitive athletics for elementary school children. The famous coach of the Passaic High School basketball team that won 158 games in succession was a city director. His opponents said that he had a basketball backboard in every back alley in the city. If he did foster such early beginnings, he was only a forerunner of present-day practices.

Opinions concerning competitive sports during childhood and early adolescence. The Journal of Health, Physical Education, and Recreation for May, 1950, contains as an opening article a committee report on "Interschool Competition for the Elementary School." The committee notes that most health and physical education organizations are opposed to interschool competition at these grade levels, but the report of the committee does seem to indicate that such competition may be increasing in numbers involved, and in scope. In the opening article for the same journal for November, 1947, the opinions of orthopaedists, on interschool competition below the tenth grade, are presented. Sixty-seven per cent of those replying felt that interschool competition should

¹ *The Centre Daily Times*, State College, Pa., March 4, 1950.

be limited to the physiologically mature. About thirteen per cent disagreed.

The National Recreation Association is opposed to state championships for these elementary school children. The National Committee on School Health Policies says in its Bulletin of 1948, entitled *Suggested School Health Policies*, that interschool athletic leagues should be confined to senior high schools. It continues:

Interschool activities for junior high school pupils should be limited to occasional meets or games. Junior high school boys should not compete in American football. An extensive program of intramural activities is strongly recommended for these students. Play days can be conducted to bring together pupils in different elementary and secondary schools for socialized participation in games, but no school championships should be involved.²

Two questions have been raised about intense competition at the elementary and junior high school level: (1) Does the intense effort of the highly competitive program retard the growth and development of these youngsters? and (2) Are the joints of the young boy firm enough to withstand contact-game experience without serious injury? The feeling of those who raise this latter question is that cartilage injuries in the knees, weak wrists and ankles, chronic shoulder dislocations, and the like, will be more prevalent among those boys who start the rough contact games in elementary school.

Discussion of the problem of competition at the elementary school level promotes much heated emotion. It is very difficult to keep the discussion on a factual basis. Those in favor of competitive sports at the immature-growth levels have been criticized for insisting on facts and research data instead of accepting authoritative opinion. Yet the history of scientific progress reveals great retardation of advancement because of the imposition of authoritative opinion. The coaches are accused of letting a selfish desire to win cause them to disregard the best welfare of the chil-

² National Committee on School Health Policies, *Suggested School Health Policies*, 2nd ed., 1948. Distributed by the American Medical Association, Chicago, Illinois.

dren. It is true that most coaches favor extensive sports for the younger children so that those who come up to the interschool squads may be further advanced in skills, but it is also true that many of these coaches think the program of sports is beneficial for the physical development of younger children.

Perhaps one of the most carefully prepared reviews of evidence in the field of physical fitness is the work of Dr. Cureton and his colleagues, *Physical Fitness Appraisal and Guidance*. Much of Chapter X in his book bears on the problem of childhood sports participation and strenuous exertion for youngsters. Cureton concludes³ that, properly supervised, vigorous sports participation makes better, stronger and greater physical specimens. He also says:

The modern opinion is that well supervised athletes (athletics) will do no harm to elementary and junior high school boys, although these boys should have a medical examination and be supervised by an expert in physical education.⁴

Cureton says he has observed:

. . . competitive swimming programs for youngsters for the last thirty years involving thousands of youngsters of both sexes, from 6 to 14 years of age. They have competed strenuously time and again only to grow strong in the doing.⁵

Cureton also mentions the fact that Japanese and Hawaiian youngsters, eleven to fourteen years of age, appear regularly in the national meets, and that these people start training at the age of six to eight.⁶

The weight of medical opinion and of public health organizations is usually against highly competitive, and particularly body-contact, sports for children below the senior high school level. However, the present trend seems to be an actual expansion of such programs. It is suggested that the coach cooperate with whatever program his community and his educational administrator desire.

³ Thomas K. Cureton, *et al.*, *Physical Fitness Appraisal and Guidance*. St. Louis: C. V. Mosby Company, 1947. Pages 309-322.

⁴ *Ibid.*, p. 313.

⁵ *Ibid.*, p. 315.

⁶ *Ibid.*

The coach does have the additional responsibility of doing whatever he can to insure adequate protective equipment, safety observances, and adequate supervision of such programs. In general, the coaches will select *the more mature boys* for the junior interschool teams for the simple reason that they tend to be the better players. Those coaches in sections where sports are extensively stressed in the elementary and junior high school do seem to have more skillful senior high school teams.

Athletic skills among young children. Many great athletes of our time began their training at a very early age. Bob Feller in baseball and Helen Wills Moody in tennis are famous examples. The world-famous Bobby Jones began his golf lessons at the age of seven. The recent champion of the women's winter tournaments in golf in Florida and Texas is a fifteen-year-old girl who began to play golf at the age of four. Swimming seems to be a sport in which childhood beginnings may make a world champion even before high school days are over. In track also, very early development of world's champions occurs. The American Decathlon champion of the 1948 Olympics was a high school boy. So was the boy who won the American championship in the rope climb.

Athletic development at advanced ages possible. The argument from individual cases could also be used to favor later development. Many famous athletes made their beginnings in sports participation in college. The famous milers in track have tended to reach their greatest development after their college days are over. Every year the college coach encounters boys with no previous experience who want to try out for some sport. Many such boys have succeeded in making a varsity team. To start at the college level with the handicap of complete lack of the specific skills of the sport makes it necessary for the boys to possess other favorable aspects to a remarkable degree. Beginners with grim determination, and six inches of height above the six foot mark, have made college basketball teams. Boys without experience but with unusual stamina have made the college track team. Big, strong boys with considerable speed but no previous experience have made the foot-

ball team. Such successes have occurred in universities with teams that gain national recognition. With good coaching, many more novices could make good in the colleges that compete at a lower skill level.

There are a few college coaches who think intense competition on the high school level "burns out" the athlete's energies so that in college he never realizes the potentialities he might otherwise have attained. Most of the college coaches prefer high school stars if they can get them. The possibility of these stars making further progress may be either not so great or greater. Both opinions are held. The boy may lose interest because he already has had years of intense competition and sports thrills, or he may have developed an even stronger hunger for the action of competitive sports.

Individual differences are so great in boys that each coach wants almost a case history of the boy before deciding anything about his potentiality. The coach generally looks either for the younger and somewhat less mature lad, the individual with the driving ambition to be a much greater athlete than he is at present, or for a boy who is already almost good enough to compete on the college team. The coach will work with any boy who seems to have the potentiality for success, but he is usually glad to get a boy who has already made some strides toward the attainment of skill potentialities. This statement is true of the coach at any level of coaching.

Sane policy for coaches. There seems to be no objection to the furnishing of facilities and equipment for informal games in the non-contact sports even at the elementary level. The coach can furnish, without public disapproval, special skill practice by the informal play approach except, perhaps, in rough contact sports. In these sports the argument is advanced that since the elementary school boys will play anyway in imitation of the older boys, the school should offer these sports under supervision. This type of reasoning is faulty. The school can not afford to introduce activities into its program just because the boys will take part in these activities anyway. By the same faulty argument, some schools would install smoking rooms, beer gardens, or worse. If contact sports are justified at the elementary level, they must be justified

on the basis of developmental value to the boy, not on the basis of inclusion as the lesser of two evils.

Amount of learning without coaching. Boys may progress to a very high degree of skill without coaching. Boys who spend all their spare time on a basketball court or a baseball diamond are likely to bring to their high school a lot of victories even if a faculty member is assigned to coach them who has little knowledge of the game. Golf course caddies often acquire great skill in golf without any lessons in the sport. Boys born along the beaches or on islands are usually adept swimmers without instruction. The gang of "kids" that plays together at the Y.M.C.A., or some type of boys club, arrives at high school ready to step into the line-up. The boys have learned by practice and by imitation of what they have seen older boys do. In communities in which the older boys play well, the younger boys watch them, imitate their skills, ask them questions, and copy their strategy. These boys, with the better models, come to the high school coach much further advanced in sports.

Need for coaches. Why have coaches if the young boys can learn so well without them? The coach can save the boys much time in their learning. He can help them avoid many blunders. The long "trial and error" until they hit upon a better method is greatly abbreviated. The coach knows the work methods that have been most successful and he demonstrates them to the boy; for example, he shows the novice how to turn sideways and shift his weight for stroking a tennis ball. He points the football for the boy so that the boy can achieve the spiral in his punting. He shows the boy how to take short steps, keep close to the ball, and handle it with a lower leg and flexible ankle, in soccer. The short cuts to sports learning are numerous. The boy might hit upon some of these better techniques by chance but in most cases it would take him longer to achieve the same degree of proficiency by himself. In many cases, he would develop handicapping habits that might persist and keep him at a mediocre level.

The coach can spot quickly the major errors in the boy's way of playing, and help him to correct them. The coach can also guide

the boy into practice methods that have shortened the time of learning of many former athletes. The coach tells the boy how to practice, how long to practice, and just what to emphasize in practice. These bits of advice enable the youngster to profit vicariously from the errors of many athletes who have preceded him, and to profit from their discovery of more successful ways. The coach infects the boy with his own attitudes of confidence in the techniques, and of confidence in ultimate success. The coach knows personally many great athletes, and perhaps was one himself. Boys are great hero worshippers. Pictures and records of the "great" in sports adorn the bulletin board. The boy is taken to see the best, if possible. He sees the great models, tries to imitate them, is guided into faster ways to learn, is encouraged, and progresses.

The beginner in sports. The high school coach will have many beginners. In some sports, all his boys may be novices when they first come to him. Without playground leagues or junior high school competition, the coach is confronted with the problem of teaching complete neophytes in his sport. This problem, of trying to make a respectable interschool team out of complete beginners in the space of from one to three years, accounts for the coach's interest in promotion of some athletic activity for the elementary school groups.

The beginner is more easily fatigued in the particular game. His muscles will need time to develop so that they can perform the strenuous activities without extreme fatigue. His physiological conditioning is inadequate. By slow, but progressively harder work in the sport, the beginner is conditioned to compete without the handicapping effects of an extreme feeling of tiredness, soreness of muscles, panting for breath, and pains in his side or chest and abdomen.

The absence of skill, in itself, produces greater fatigue. The boy wastes more energy because he becomes tense, has too high a degree of tonus in the antagonists to his various muscular movements, and actually makes movements which he, himself, is partially resisting. He holds his muscles in this tense working state

even in the moments when the more experienced boy would be relaxing for momentary rest.

The beginner has three major problems of learning: (1) physiological conditioning so that he can persist in the activity, (2) adoption of performance methods that include a pattern of appropriate movements and an exclusion of unnecessary movements, and (3) a control of his reaction to stimuli so that there is not a diffusion of response and a generalized tension.

The first problem, that of endurance, will be discussed in Chapter IX. The second, that of form, will be in Chapter X. The third problem, degree of relaxation, will be mentioned briefly in connection with various types of sports learning. Relaxing appropriately is a process of *conditioned learning* that is none too well understood. Apparently it accompanies, to some degree, the acquirement of a skill. The process of skill learning seems to be a gradual adjustment toward easier ways, or more effective ways, of performance. A gradual decrease of the diffusion of energy to the wrong muscles tends to go along with skill acquirement. The learning of the control of the emotions is a part of the learning of energy control.

Necessity of relaxation. Relaxation seems to come under voluntary control, at least to a certain degree in the expert stage of skill acquirement; for example, the expert who is tremendously concerned about the outcome of a sports event seems to be able to present an unconcerned appearance. Moreover, he seems to be able by voluntary effort to force himself to relax his skeletal muscles so that no excess tonus interferes with his performance. The final putt on the last green, which means the match and the prize money, finds the great golfer forcing himself to abstain from tensing the wrong muscles.

If emotional control is not well learned, critical moments in the game when the emotional tension is highest will result in loss of skill by a player. His muscles suddenly try to work against his own over-tense antagonistic muscles. He becomes stiff and clumsy in his movements. He muffs the grounder and the runner scores from third, he fumbles the punt and the opponents recover

deep in his own territory, or he misses the foul shot that would tie up the game in the waning minutes.

Teaching the beginner. When boys see a simple skill performed in relatively slow motion by a demonstrator, they can make rapid, first strides in learning by imitation. A few simple verbal directions accompanying the demonstration by the coach, and a few guiding directions during the process of the boy's imitation, indicate for him the major aspects and help him avoid the major errors. The imitative process is not an analytical process. The observation as remembered by the imitator is a general impression, a general idea, an over-all picture that gives the major outlines of the skill performance but is vague in the details. Many of the detailed movements will fill in without conscious attention.

In a ball tossing experiment involving the acquisition of an accuracy skill, Hoke⁷ found that the best results could be obtained if attention was directed to the consequences of the error, to the net results of the act, and to the *idea* of success. Berlin⁸ studied the effect of a diffused and lower level of attention on the movements being learned, as contrasted with *focus* of attention on the movements being practiced. She concluded that, after the initial period of learning was completed, diffusing the attention (implying a lower level of attention on the actual movements) was conducive to greater learning. She says:

Complete focus of attention on the learning process does not seem to be the attention level that is most conducive to learning.

The facilitating value of practicing skills while blindfolded (cited in a couple of experimental studies) may be due to the impossibility of the blindfolded person paying as close attention to his motor movements. In Sherman's study, *Drawing by Seeing*,⁹ he had his subjects focus on "perceptual unity" by having them

⁷ Rex L. Hoke, "Factors Conditioning Efficiency in a Motor Skill," *Journal of Experimental Psychology*. June, 1932. 15:392.

⁸ Pearl Berlin, "An Experimental Study of the Learning of a Fine Motor Skill Under Conditions of Diffused Attention" (Unpublished Master's thesis, The Pennsylvania State College, 1947).

⁹ Hoyt L. Sherman, *Drawing by Seeing*. New York: Hinds, Hayden, and Eldredge, Inc., 1947.

draw rapidly in the dark what they had just witnessed in a "flash" exposure. Their attention was on the idea or mental image, not on the drawing movements.

It would seem that the beginner learns sports skills most rapidly when he gets the "general idea," and then practices, perhaps with accompanying verbal guidance by the coach. The learner diffuses his attention in order to pick out cues for the next movements. For the beginner, these cues may be chalk lines or marked spots on the floor. They may be verbal guides to movement order; for example, repeating to oneself in tennis, "Sideways! Backswing! Weight shift! Forward swing!" The types of cues vary with the stages of learning. A flash view of an open goal area results *automatically* in a try-for-goal by a nearby, experienced forward. An interception by opponents is a cue for a defensive action. Among the experienced athletes a teammate's call of "Switch!" is a cue for exchanging men.

If the skill is a little too complex for the beginner to get the general idea from demonstration, the next best procedure is the slow-motion rehearsal of the whole pattern. The major cues for the successive movements are shown and at the same time stated in words, for the beginner. The demonstration is repeated until the learner seems to get the general idea. Then, very slowly, he is started through the performance of the movement-pattern. The coach adds verbal guidance to keep the individual conforming to the major aspects of the act. The boy continues through the complete act in slow motion, without excitement or pressure. Continuous movement is essential to give the learner a grasp of the total motor act. He should move as slowly as necessary (he generally wants to go too rapidly) to pick up the cues in time for added guidance and continuous action until the whole act is completed.

The reception, steps, and kicking of a football in the manner useful in a game might require only a demonstration followed by imitation, or it might require the slow, careful but continuous progress of the boy through the reception, the step, the careful placement of the ball on the foot, and the swing through with the

final snap. Stepping and executing a forehand or a backhand stroke in tennis is another motor act that might have to be taught, first, by the slow continuity procedure. The footwork on the double play around second base is another pattern that would probably take demonstration and slow motion rehearsal. Most of the team plays in sports can best be introduced by these teaching techniques.

In the team play of basketball, five-man offensive patterns are often taught the beginners by the slow-motion, continuous-performance procedure. Chalk lines drawn on the floor, letters or numbers for successive positions, and a few cues for time of initiating each move, may be necessary. The coach walks through the whole pattern slowly from position to position. He continues from the first to the fifth position. If a team is available that already knows the play, a walking demonstration by them comes next, followed by a quick rehearsal to show the boys what the finished pattern will look like. With or without this team demonstration, the coach will walk through, and draw on the floor, the exact pattern until the boys think they have grasped the idea. Then they try it very slowly, continuing until they have gone completely through the pattern. Extreme slowness is necessary so that additional verbal guidance may be added by the coach, to keep the outline of the pattern approximately correct. The chalk lines will help.

The above continuous-action procedure is not the only way beginners can learn the complex patterns, but experiment seems to indicate that it is the way by which they learn most rapidly. This teaching technique is a very useful procedure at the junior high school level in sports, the level at which boys are very likely to be real beginners. It is frequently the best technique in the senior high school if the boys have little previous experience. It has been used with much success at the college level, particularly in teaching team patterns of offense or defense. The boys see the idea of the whole pattern quickly, know what they are striving to do, and because of this can practice more intelligently for improvement.

Meaning in competitive use is the foundation of real skill learn-

ing. No part of a skill pattern in sports means the same thing in its successive recurrences as the panorama of the game unfolds. An example from another field may clarify the point. Meaning of words in a sentence is determined by the rest of the sentence. The word "dog" is, at first glance, exact in its meaning, one thinks. The coach wins a game and his opponent calls him "a lucky *dog*." His assistant tells him in the shower that it was a long day and that he is "*dog-tired*." He goes home to dinner only to find alumni present. His wife remarks that the visitors are rather important people and that it will be necessary to "put on the *dog*." These meanings are almost unrecognizable when compared to the part-drill definition he learned in science class, "A dog is a four-footed, domesticated, carnivorous mammal of the genus *Canis*."

Meaning in sports. Compare the above variety in meanings to the changes in meaning in a motor skill such as the act of throwing. In baseball, for example, the act may be the wind-up and speed throw of the pitcher, the quick-release snap to second base of the catcher, the underhand toss or throw of the infielder or the "long peg home" of the outfielder. Each throw has a specific nature in terms of the game situation. If one applies the throwing act to the javelin, the hammer, or the discus, he gets even more radical change in meaning. Throwing taught as an act divorced from the game has extremely vague meaning in terms of sports use.

Drill on basic skills with little understanding of use may occur in basketball footwork drills, pivots, changes of direction and screening drills. Practice without meaning may occur in "pulling out" drill for the guards in football. The use of "dummy" defensive men during sport practice is a common device to aid the boys in understanding. Without the defensive man present, the basketball player may run by his screening teammate at such a distance that no screen occurs, or the guard in football may run past the man he is supposed to block because the opponent is not in the path taught by the drill.

Other examples in sports show the frequent discrepancy between part-drill meaning and use in competition. The track boy may measure his steps and take-off point for the jumps just as the coach

directed, but if he does it only as a sort of ritual he is supposed to go through, he may easily forget the marks entirely when he jumps in competition. The basketball player works long and faithfully perfecting a set-shot from a certain spot on the floor. The opponents, finding out he is a "spot-shooter," never leave him uncovered at his favorite spot but give him considerable freedom to shoot at other areas. He tries from these unpracticed areas but his percentage is too low to make shooting profitable. His learning will not fit into the game. Maybe a golfer works hard to perfect his long driving only to get on a course of "dog-legs," narrow fairways, and sand-trapped greens. His long drives merely get him in trouble. The tennis player works away at his forehand drive until he has it functioning smoothly only to meet an opponent who plays his backhand all through the match, or, he plays a cautious, placement game, only to meet, as opponent, a smashing, volleying, net player who leaves him too little time to place his strokes. Basketball uses the dribble to form a screen, to set up a fast break, to clear a closely pressed man, to go around a defensive man for a try at goal, and to "freeze the ball." The movements, the timing, the amount of screening by the dribbler's own body, and the direction of attention are different in each dribbling situation.

Possibly the complete beginner is taught to dribble a basketball by isolated drills. He learns to dribble the ball rather well as a separate skill, but he dribbles with his eyes only on the ball and not, as the game demands, with his vision ahead of him covering the offensive area. In this isolated exercise, he learns to dribble the ball out in front of his body, where he will seldom be able to dribble in a game because of the defensive guard. He does not learn to protect the ball with his body. It is doubtful if he will learn the sudden changes of pace or of direction so useful in the actual game. He learns to dribble without realizing that his main purpose is to avoid opponents and *see an open teammate*. He is not keeping his attention on the real purpose of the specific skill. Introduced into the game with this type of faulty learning, the incorrectly trained man breaks up the teamwork by dribbling when he should pass. Often he dribbles when he is already in position for a suitable at-

tempt at the goal. After being severely reprimanded for failing to pass to an open teammate (whom he did not see because he had his eyes on the ball), he is afraid to dribble, and he passes badly when he should dribble to a safer, passing position.

Such examples of the inadequacy of isolated-part learning for use in the game could be taken from all team sports. The same errors occur in soccer even with the dribble. The purpose of drill is to automatize the skill so that it *occurs as a habit response* when the situation that demands its use arises in the game. The appropriate time to use the specific skill in the game, the adjustment of the habit to peculiar defenses, the timing of the part to fit into the game conditions, are things not learned in part-drill. During this practice of dissociated patterns, actual handicapping habits may be learned that make the adjustment to the game conditions even harder; for example, habits have time-rates that may not fit the game. When these time-rates are made faster or slower by game demands, the habit is upset.

Progress with meaningful units. As a basis for teaching youngsters, it is best to begin by using the human aptness for imitation. One should demonstrate for the boy, let him see experts play, and let him practice in imitation. Later, when the boy is being given instruction in a basic skill, one should make sure that the skill has real meaning; that its purpose in the game is made clear. The coach can point out the particular skill's occurrence in actual games, show the boy movies that illustrate the skill, and demonstrate the skill in actual scrimmage with the boy's attention on its use as it is being applied in the scrimmage.

As soon as possible the basic skills should be used in a simplified game. If possible, the skills should be taught in simple but enjoyable lead-up games. This procedure makes the skill meaningful from its very beginning, adjusts it to the variations which occur, and motivates its acquirement. When the boy has progressed far enough in his learning to be used as a competitive player in inter-school games, he is ready for drill on parts that are weak. The punter knows why he must perfect his kicking steps because he has seen kicks blocked. The pitcher knows why he must concentrate

on practicing for control because he walked too many men the first game he tried to pitch. The boys understand the need for footwork drill around second base because they failed on their double-play attempts in the last contest. Practice without this understanding means much slower learning.

In dealing with the boys of the more advanced skill level, one should first make certain that they have a general idea of a pattern. The experienced boy will need less demonstration, and less continuous movement through the whole pattern, before he understands its meaning. The "M" and "W" offensive formations in soccer, the offensive weaves and the zone defenses in basketball, the offensive plays and the changing defenses in football, are examples of patterns that can be taught easily by the whole-movement rehearsal. Earlier practice must be without opposition, then "dummy" opposition, very weak opposition, and finally more severe testing of the pattern's success. After this last stage, the pattern is ready for the special drill to polish weak *parts*. Only at this last stage is part-drill an economical form of practice. At this level of progress, the boys know how the detail bit, on which they need special polish, fits into the whole pattern.

When to use part-drill. Drill on parts is often the best procedure at the college level when the boy has already learned well all the pattern except the specific part he is working to perfect. If the boy can fill in, mentally, exactly what place the part he is practicing has in the larger sport-act, he is ready for part-drill; if he can not fill in the rest of the pattern mentally as he practices the part, he is not yet ready for the part-drill. He can learn by this latter method, but not as rapidly as he can by working at his learning in such a progressive order that all practice has meaning in game use. Part-drill, without understanding by the boys involved of the exact purpose of the part, fails to teach application in the game situation.

It is emphasized that the weakness of the part-drill method does not apply in the case of the boy who has played and found in the game the particular pattern he needs to polish. He knows how he intends to use the bit of the skill he is practicing. He practices it

in terms of how he will use it to aid in team play, to score, or to prevent an opponent from scoring. He knows the speed and the steps he *dares* use to kick a football when the other team is making a determined effort to block his kick, or he knows in basketball that rebounding and dribbling to the corner will not be successful if two opponents are usually present to wedge the rebounder. He knows that the soccer dribbler who does not pass as soon as he draws an extra man on himself will probably lose possession of the ball. In short, the experienced boy is practicing the whole game, even in part-drill, because he fills in the rest of the situation mentally. If he gets a little "rusty" on the actual game conditions, the next scrimmage straightens him out.

No pressure in early learning. One should make the basic sport skills meaningful for the beginner, first, by their demonstration in a simple, practical game pattern, next, by introducing the practice of the skills through an easy lead-up game that is fun in itself. The boy's first practices should be started at a low speed, and emotional tension and excitement kept to a minimum. Until the boy begins to grasp the simple patterns, he should have no opposition; later, "dummy" opposition; still later, very weak opposition. The growing skills must not be subjected to pressure until they get a chance to knit together.

There is considerable evidence to indicate that emotional upheaval in the early stages, caused by too great pressure toward progress, retards the learning. The training of fliers indicates that the boy should not be hurried too rapidly into the solo flight. If he fails, he may need a long time to recover from the shock of failure because he may have established an emotional block that is difficult to overcome. The same principle applies in sports. Coaches of swimming and diving and gymnastics report such retardations of learning by too great haste and pressure at the early learning stages. The boy who is forced into football action too soon may make a serious fumble and because of it be severely censured (perhaps by the students and spectators, but not by the coach). He may then have to work a long time before he can eradicate the fear of fumbling—the fear that tenses him and makes him fumble.

Competitive experience essential. As soon as he is ready, the boy should get into real competitive action. He is conditioned for crucial games only by experiencing *games*. If the squad material will permit it, introduce him to game-action cautiously until he shows signs of adequate control of his emotions. The implication is not that he should lack emotional excitement. He would be much less effective as an athlete without this strong emotional state. The point is that he must be able to direct this emotional energy into effective action in spite of his excitement.

The athlete must be seasoned slowly, and seasoned, if possible, where he will not have too much responsibility. Games in which a favorable score makes errors less serious, and games in which he can play with, and be guided and protected by experienced veterans until he learns, will condition him gradually. He must not be thrust into positions of major responsibility until he is ready. Only the veteran can experience "over-matching" and recover without danger of great retardation in his rate of learning.

Putting a boy "under fire" early may bring him along much more rapidly if he can succeed. But it may cost the coach much time and effort in reteaching if the boy fails miserably. Some of the older heads in the coaching profession hold the opinion that a boy may be so shocked by such failure that he may never recover. He makes repeated later attempts. He continues to be too fearful, and consequently is fumbling and awkward. He does not seem to be able to adjust after the effects of the first severe failure. The coach can not use him in the game so he gets less attention. He sits on the bench and loses some prestige among the other boys. Finally he gives up and quits the squad. It is possible that too early introduction to intense squad competition and emotional pressure for rapid progress eliminate many potentially good athletes.

Gradually, but not too rapidly, the youngster must be inured to great emotional tension and high speed, for that is the way the games are played. He must be shoved along at the fastest rate at which he can be fairly successful. If emotional upset, blundering, over-tenseness, and lapse into clumsy behavior indicate that he is being pushed along too fast, slow down the rate. If he is in a game,

bench him without reprimand, perhaps even with a word of encouragement, until he gets a chance to become calmer. Let him remain on the bench until his excitement is much less before you try him in the game again. In practices, keep stimulating him to that level of emotional excitement that brings out his best efforts. If you add just a little more pressure, and the boy begins to become inefficient through over-excitement, rest him a moment, quiet him, then try him again. The most rapid learning seems to occur at that peak of emotional arousal where the boy is just *on the verge of having too strong emotional stimulus* but still continues to be able to carry on his activity effectively. Any more stimulus would cause him to "blow up." Any less would not draw out of him such inspired efforts.

CONTENT OF "SPORTS COURSES"

The content of the course in athletics consists of the basic skills, the fusion of the skills into action patterns, and the fusion of the action patterns into offensive and defensive play. In addition, the course includes a study of opponents' methods, their strategy, and the best way of combatting them. The opponents' strong points and ways of defending against them are studied; also the opponents' weak points and the best ways to take advantage of them.

Content of sports has been increasing steadily for the past few years. New offensive techniques are invented and then new defensive techniques have to be invented to match them, or the inventions may occur in the reverse order. In football, for example, the defense may play any style from a four- to an eight-man line. The lines may charge in a cup defense or fight off the defense from a semi-erect stance in attempt to hold their positions. They may loop over one position in their defensive charge to upset the blocking by the offense. The ends may crash and the tackles float laterally to cover end territory if necessary. The backs may play a zone defense against passes, a man-for-man defense, or a combination of the two. Most of these procedures may be combined into the defensive plans of one game with a defensive quarterback directing the changes.

The offensive content is even more extensive. In football, the team will use one or two formations besides its punt formation, and learn the general principles of many other styles in order to meet opponents who use them. There are single wing, double wing, "T" and split "T" formations, "Z" formations, spread formations of all kinds, short punt and long punt formations, and variations of each one of these. Each play must vary its blocking to meet the changing defenses, or, for deceptive purposes, to meet the same defense.

In basketball, the content has also increased tremendously in the last few years. There are the basic skills of ball handling, shooting, pivots and footwork of other kinds, dribbling, defensive covering, and so on. Mixing the defenses, using more than one defensive style in each game, has become the custom. Defenses press for a while, then they change to half-court covering only. In the half-court, they may draw back toward the basket on the far side of the court from the ball to "clog up" the scoring area and make screens less successful. They may switch men when the opponents screen and, later in the game, stop switching on the defense. Many teams use both zone and man-for-man defense in the same game. A man-for-man team may "float" the man covering the "post" so that he is *between* the ball and the "post" all the time, and fade a far-side teammate to cover the "post-man" on high, looping passes.

Offensive content has increased in proportion to the defense. There are "single post" offenses, "double post" offenses, five-man weaves, "figure eights," and various mills and continuities based on screening principles. The individual variations of fakes, pivots, and shooting styles are almost without number.

The content of most of the other sports has increased in almost the same proportion, perhaps a little less. That sport in which there seems to be the most public interest, pressure, and money at the gate, will tend to develop a little faster. In any of the sports, the basic skills must be learned as a groundwork on which to build. A good blocking and tackling football team with a passer and a couple of "glue-fingered" ends can "get by" with a simple system. The same statement is true of a basketball team that can shoot,

handle the ball, and cover defensively. If a soccer team can really handle the ball in team play, it will win a lot of games.

Sometimes the coach adds so much content to his course that the boys do not learn well. Sports learning is worthless for competitive use if it is not habit response to perception. A player has no time to stop, think, and then correct, in the fast-action game. His body must act automatically while his mind is busy observing the opponents to catch cues for succeeding acts. What thinking is done must be the thinking about immediate future possibilities, as a preparatory set and guide to attention focus. This mental rehearsal consists of flash impressions occurring while the body is reacting to the present situation. When the player anticipates what is about to occur, he can react more quickly to its occurrence.

Wrong anticipation may cause non-adapted action. The batter, trying to outguess the pitcher, instead of being set to *see* what is thrown, swings as he guesses and usually fails to make a hit. The halfback who guesses at the play in advance and moves out of position to cover it, may be fooled by the quarterback who fakes the play and then passes to the open spot. The distance runner who figures to trail the leader closely in expectation of passing him with a sprint toward the end of the race, is fooled by the decoy who intentionally runs too fast a pace in order to "kill off" the opposition for a teammate. Anticipating the opponent's action is an excellent technique except when based chiefly on guesses.

Strategy. Strategy is the plan of campaign that one expects to use to conquer the opponent. In football, it may be the sudden inauguration of a running attack when the opponent has specialized in defense against passes, or vice versa. It may be the old Kipke system of kicking on first down and waiting for the breaks. In basketball, it may be Frank Keaney's old Rhode Island State System of rushing the opponents all over the floor, playing continuous press and fast-break. Keaney would always trade baskets on an offensive gamble because he figured on scoring an extra one or two in the bargain. On the other hand, the strategy may be Hank Iba's of never losing possession of the ball except on shooting attempts that seem most likely to succeed, and of attempting such shots only

when the team has good defensive floor position in case of a miss. Offensive board rebounding is understood to be a part of this "good defensive floor position." Every time the rebounder gets the ball, he decreases by one the times the other team must be defended against.

The other extreme from this cautious ball control appears in those games in which both teams score up toward a hundred points. In the beginning days of the Basketball Association of America League, the players on one team were accustomed to caution each other (in caustic comment on the extreme lack of any ball-control principle) not to shoot until they got the ball. Emphasis on an attempt to outscore the opponents, with much less regard to defense, makes a popular spectator game. The famous Yankee baseball club has tended to stress the scoring, although one could not accuse them of being weak defensively. One common bit of baseball strategy at the college level occurs when a poor fielding pitcher is assigned to pitch. Many a coach has had his team bunt such a pitcher right out of the game.

Strategy may be made up of small items. The placement of the fielders for certain hitters is a part of strategy, and so is the type of ball thrown to them. In the colleges, the coaches soon find out if the catcher has a slow throw to second and take full advantage of such weakness. Some soccer, lacrosse and basketball players have one favorite side which they use for dribbling, shooting, or kicking. They are very ineffective when they use the other side of the body. When the defense finds out this weakness, they shift a little more to that favored side and check the opponent easily. This weakness accounts for the great emphasis in recent years on ambidexterity in sports.

Sometimes the weakness is just an error due to an unconscious habit that the player has fallen into unwittingly. One All-America basketball star of 1949 was equally good with both hands from the "inside-post" position. One opposing team found in scouting that he always faked in toward the foul lane, then turned toward the outer corner of the board to shoot, or dribble and shoot. He made this inside feint and outside turn regardless of the side of

the foul lane on which he placed himself. The opponents merely stepped the opposite way from his feint to cover him. The otherwise great scorer quit playing the "post" against this team without realizing why he had been so ineffective.

Sports learning vs. academic learning. Before trying to transfer academic teaching procedures to athletic coaching, the coach should realize the differences in the types of learning. There is very little relationship between abilities in the two fields. The sports field emphasizes quick perception followed by habit response, automatic behavior, and attention on opponents, results of acts, and field of play, but *not* attention on one's present actual movements. In sports, as soon as the senses get any cue to act, they turn it over with complete confidence to the "custody of automatism" and continue trying to pick up guiding cues for further activity or sudden change in activity. The senses perceive what results are occurring and what reactions the opponents are making. These perceptions fuse into a stimulus for a chain of habit responses, continually corrected by the incoming cues from the senses.

In the well trained athlete, the process of continual correction, rearrangement, and readjustment of these responses is also successive habit-response to successive situations. Each cue calls forth its specific habit adjustment which is soon changed, perhaps even before completed, by another incoming cue calling forth a different response. It is the unconscious, machine-like nature of this responding to successive situations that makes "rapid-fire" adjustment possible. Present day automatic aiming and firing weapons of warfare are probably operated on the same basic principles of continual correction to various incoming cues, *without the intervention of any thought process.*

The athlete does none of the careful ratiocination of the academic world during his performance. He does not collect data, weigh it in terms of hypotheses, analyze, synthesize, and generalize about what to do, before acting. The doubting, deliberative, mental weighing has no place in the sports contest except by the coach (or possibly the boys) off the field, planning the strategy. But even

the strategy must be reduced to quick perception of cue and prompt habit-response if it is to be effective in the game.

Learning the skills of a foreign language has some similarity to the learning of sports in that it involves habit response, synthesis of the words into meanings, and use. But the skills of sports as used in the contests require a mastery that permits no attention to "how" one is expressing himself. It is assumed that the form of expression will be taken care of by habit. The individual's attention is busy with the determination of the results of his own skill expression, the reactions of the opponents, and the cues for further expression.

The coach demonstrates *how* to do a skill and has the boys do it *that way*. The boy is not concerned with finding out *why* he should do it a particular way if he is sure that particular way is successful. There are times when the boy may want to know *why* out of curiosity, or because he has other ideas of a better way. In such cases he may be given such explanation as will give him confidence in the soundness of the procedure. In general, the boy wants direction only about the best way to do the skill. He has no desire for knowledge of the physics of the movements and no special urge to be self-analytical. It is better so. For the beginner, movement analysis and self-analysis are much slower approaches to skill learning.

The coach in his own preparation can go through the physics and the body mechanics of the act to determine its soundness. He is the analyst; but the performer and the analyst are different people. Paying attention to the *how* and the *why* of doing takes the attention off the cues for *what to do*. Moreover, such attention-focus introduces a thinking process into a motor habit that spoils the timing of the motor habit, if it does not disrupt it entirely.

The language student has the same problem. If he is trying to participate in the "give-and-take" of quick social repartee, he must make responses before he has time to think about their form and their appropriateness. Otherwise he will be so slow in framing his

conversation that when ready, he can not fit appropriately into the general group-conversation. He can only go home and reiterate to his wife his clever (though unexpressed) responses of the evening. But the athlete's wife presents a different situation. She has seen the score.

PRINCIPLES OF SPORTS TEACHING

Passing a ball, hitting a ball, or kicking a ball are habit responses if they are quick non-thinking responses in rapid-action games. Habits are learned by many repetitions. Moreover, motor-skill habits have to be generalized. They have to be variable enough to fit many situations. One faces many types of pitchers throwing many types of curves and straight balls. One plays soccer on many types of surfaces, receives passes from many angles and directions, and kicks from many positions. The basketball forward would shoot from exactly the same spot twice in a game only by accident. The defensive man forces him into a variation of movements. It is even doubtful if an individual can make exactly the same motor-skill movements twice in succession. Superimposing one's handwriting of the same words, written a second time, will show differences in the movements of writing, even though there was only a moment of time between the repetitions. The more complex sports skills evidence greater variation from one time to the next. High speed movies will reveal clear differences in sports-skill movements of an individual even if the movements are successful repetitions. Of course, exact repetitions are unlikely to be suitable in sports. The distances vary, the wind varies, the terrain varies, the opposition varies, *ad infinitum*.

The teaching principle is: *Generalize the skill by practicing it under varying conditions*; for example, in golf, pitch onto the green from various angles, in dry and in wet weather, on a windy day and on a still day. The example is easily multiplied by illustrations from other sports—change the racket, the playing surface, the balls, and the background and court in tennis; or, play the outfield in baseball on windy and still days, with the sun and without, on dry, hard ground, and on soft ground, and with different

backgrounds for the batter. The skill that is not generalized will not fit into interschool competition. Courts and fields, crowds, lights, and the player's physiological condition continually vary, yet the player is expected to make successful adjustments.

The coach should begin his teaching at whatever level the boys have already attained, and proceed from there. In other words, the sports assignments should be neither easy and unchallenging nor so hard that the boys become greatly discouraged. If the boy is a complete beginner, he needs, first, an idea of the game. He can get this from seeing a game played, watching movies of such a game, or by both means. Even the good high school team can profit by seeing a game played by the best college or the best professional players. They see performances that reveal to them new possibilities in the game. The boys will need some guidance in their observation of these great teams. They may need preliminary directions by the coach concerning what to observe, which aspects they might consider imitating, and which are too difficult for the boys' present stage of learning. A discussion after the game adds to the value of the game observation.

How important this directed observation is can be illustrated by example. Luisetti, the great Stanford star of the late 30s, played in Philadelphia during his college years and demonstrated in action his distant, one-handed jump-shot. The high school athletes of Philadelphia observed him and some of them went back to their practices the next week with the intention of copying his style. The coaches said that the shooting percentage of some of the teams dropped off fifteen per cent in the next week before the coaches were able to persuade their players that they were not embryonic Luisettis.

Day by day progress. Once the beginner has an idea of the game, he should try it out a little in practice. Then he is ready to begin his basic learning. The coach demonstrates a few basic skills and the boys try to imitate him. The coach puts a few skills together into a little lead-up game and the boys play. They receive constructive criticism and occasional interruptions for a bit of help, but practice most of the time. When the coach thinks the boys are ready, he puts the lead-up games together for them and

lets them try the whole game. Here the major errors begin to be evident. The boys are now far enough advanced to be ready for some drill on parts. They polish the parts and go back to playing. Next, they are ready for team units of offense or defense. They work on these large units and perhaps try them against an outside group of boys—boys who are not familiar with the exact pattern being practiced, and who are therefore easier to fool. A freshman squad, a junior varsity squad that is working on different material, or a nearby school team that is not on the schedule, may serve for practice. The outsiders will also confront the squad with new styles and new techniques of defense and offense. New errors will crop up in the boys' performance that were not so easy to see when they were playing against known opponents. The boys will go back to practice with a better understanding of which parts need special drill. They have been shown, perhaps by the additional guidance of the coach, certain parts in which they are weak and on which they desire to improve.

At some point during this stage of progress, the coach will begin to use these boys in interschool games. They are now at a stage where errors are serious, and where achievement means prestige and renown. They are getting into the interschool games and their play is getting very careful scrutiny. The coach checks their strengths and weaknesses on individual rating scales. He gives them specific, detailed directions for practice, specific criticism and specific praise. He brings them the statistical summary of the movie analysis of their play—so many errors of certain types, so many successes of other types, effective maneuvers, and so on. The coach adds to these data some constructive directions for each individual's practice. These individual diagnoses of play and accompanying directions are furnished while the experience that showed the need is still vivid in the boys' minds and while there are almost immediate future situations in which improvement, through the planned practice schedules, pays off in game successes.

Tiresomely protracted practices. Practice does not produce desirable learning unless the boys are trying to improve. Long, dragged-out practices are likely to give boys drill in performing in

a disinterested and less efficient manner. The players can become worse instead of better by practicing without intent to improve. More than their skill suffers. Their attitudes become less favorable. They become excessively fatigued and irritable. This "fed-up" mood is the origin of many squad discipline problems.

Practices should be planned in advance, well organized, and full of concentrated work, but they should be relatively short and should end at the time planned. If there is need for some individual tutoring, the coach can do it before the other members of the squad assemble, or after all but the individuals needing special attention have gone to the showers. Very little work should be permitted the playing team after a hard game. They might be warmed up enough to work the soreness out of their muscles, then given a hot shower and sent home. Some coaches make a practice of showing game movies to the starting team on the next practice after the contest instead of giving them actual exercise. In the meantime, the players who were not in the game have a vigorous workout.

A little exercise, even if it is only a walk, is usually better than none, to accelerate fatigue recovery. The venous and capillary circulation needs some muscular activity to squeeze the blood through the muscles and extract fatigue remnants. Recovery from physical fatigue and stiffness is usually more rapid with light exercise than with complete rest.

Short practices preferable. One of the advantages of the short practice is that it is more likely to leave the boy still thinking about the game and wanting to play some more. He will go home from practice thinking about his play. If the boys want to do some home study, mimeographed plays or instructions may help. Thinking about one's performance between practices does seem to contribute to improvement. If the practices are too long and too fatiguing, there is danger that the boy will leave each practice with a sense of relief and forgetfulness. He refuses to let the thoughts of the practice enter his head until time for the next practice ordeal. He not only learns almost nothing between practices, but also forgets much of what the coach tried to teach him. The short prac-

tice permits more practices per week, a more intense, more business-like, more "game-like" practice situation, preserves a higher level of enthusiasm, and permits more intervals of rest for the skills to "set."

This last hypothesis that skills grow together, harden, or etch themselves into more distinct patterns during rest periods is not entirely established. It probably was something of this nature that James had in mind when he said that we learn to skate in summer and to swim in winter. What probably happens is that the important, stressed aspects are remembered and are strengthened by mental rehearsal, or by some sort of physiological knitting together. The gestaltist might call it a closure of the configuration. The coach says, "The boys are beginning to understand what it is all about."

Degrees of difficulty in sports skills. Fielding a bunt on the run in baseball and getting the ball over to first base without straightening up for the throw, is a difficult skill; so is catching a very high, twisting, windblown foul back of home plate. Compare these plays with the easy one-bounce grounder that the second baseman fields to throw to first base. But if the second baseman must run at full speed to his right to meet the ball, the skill becomes harder. The greater the number of movements involved, the more difficult the skill is likely to be. If the movements must be made independently, or in interfering directions, the skill is still harder. Fielding the ball on a bunt and tossing it to first base may need to be executed while the player is falling to the ground (because of his lunging effort to recover in time to make the "put-out"). The player may have no time to turn for the ordinary type of throwing motion.

The basketball boy, going at full speed on the fast-break, must lay up an easy, soft shot from which he has extracted some of the momentum of his body movement. Otherwise the ball will rebound too hard to go in the basket. Tumblers and divers change their actual rate of movement in the air by "tucking" or straightening out. The timing in the act makes the skill much more difficult. The boxer cuts off his follow-through quickly in order to be ready to take advantage of additional openings if his blow was

effective. If his blow was not effective, he must check his momentum and choke off the follow-through, to protect himself defensively. Even in boxing it is more blessed to give than to receive.

The coach adjusts his teaching techniques and his practice time to the difficulty of the skill. The boy is trying to learn a screening pattern in basketball, for example, so the coach has a "dummy" defensive man follow him. The boy learning the offense can now see whether he is running in a path that will cause his defensive man to collide with the screener. The boy is driving at full speed to shoot but hits the backboard so hard with the ball that it bounces back too far to enter the basket. The coach shows the boy by demonstration how to take a long jump and a delayed release of the ball in order to diminish the momentum.

Unconscious errors. Perhaps the boy is committing a major error unconsciously. The pitcher may be showing the ball to the batter on his wind-up. The coach takes a short movie of the boy and shows him his unconscious error. The boy then goes through, in slow motion, his pitching motion until the spot at which he is exposing the ball to the batter becomes evident to him. This slow-motion rehearsal of the exact error may be the best way to bring the error to the boy's attention so that he will avoid it; for example, the basketball player may have fallen into the error of passing to his "post-man," and then running around him in a wide curve. The coach draws a chalk mark along the path that the boy ran. The boy denies that he ran any such ineffective path, but the coach walks the boy through the play with the boy following the chalk line of his original path. Now the boy is ready to run the play at full speed with the possible mistake clear in mind, with the chalk line to indicate it, and with a mental set that he must show the coach a complete absence of such undesirable deviation in his performance. The purpose of an error rehearsal is to bring to the conscious attention of a boy an unsuitable variation in his performance that he does not realize he is making—one, perhaps, that he insists he is not making. The coach is not interested in proving the boy wrong in front of his teammates; instead he is interested in changing the boy so that he will not commit the error again. If

the boy *avoids the error completely* to prove the coach mistaken, the coach has achieved his purpose. The coach can well afford to save the boy's pride and say, "Perhaps you are right. At least you are not making any such error now."

Teaching peripheral vision. One perceptual skill that the player may need to practice with careful guidance, is peripheral vision. A good drill for this type of learning is that of placing two boys in the playing area widely apart and ahead of the offensive boy being drilled. Place an additional defensive player exactly behind each of those two advanced-area offensive players. Just as the boy attempting to increase his peripheral vision is ready to pass (lacrosse, football, basketball) or kick (soccer) to one of the widely spaced teammates ahead of him in the offensive area, have a defensive man step in front of one of the possible receivers. Mix this defensive covering so that the passer, or kicker, must see both men up to the last instant. After considerable practice, the skill can be increased in difficulty by having both receivers covered at the last instant. The boy now has to learn even quicker peripheral vision and adjusted action in order to keep from losing the ball.

The actual physical change in this seeing-skill is a change of eye direction and of eye rotation. The general direction of the most effective looking is approximately along a midline through the offensive area ahead. Usually this midline would pass through the offensive goal. The eyes do not focus on a point, but rotate outward along parallel lines as if looking far off into the distance. School teachers and taxi drivers are noted for this skill of seeing important cues from all parts of their field of peripheral vision. Both want to catch all important cues in advance so that they can steer clear of trouble.

Teaching recognition of opponents' techniques. In teaching boys to adjust to types of play of opponents, many coaches use diagrams, verbal descriptions, and movies of the opponents. If the other team's techniques are at all strange to the boys, the coach at the high school level should demonstrate the individual performances of the opposing players, and let the boys try to play against him as he demonstrates. The boys need these drills in *doing*. To

familiarize the boys with opponents' team techniques, the coach can play with and direct one of his own reserve teams while they use the next rival's system. When the reserves have the system sufficiently learned to use for demonstration, they can scrimmage against the first team, using these techniques. The first team must be rehearsed until they are reasonably successful against the opponent's techniques. The coach may need to give them much guidance and help in adjusting their defense or offense. Just because the coach is playing with the reserve team is no reason for leaving his starting team impressed but bewildered by the next opponent's style of play.

Most effective method dependent on type of coach personality. Coaching athletics, like teaching of any type, is a form of dramatic art in that the coach or teacher must make the material real and vivid through his own interpretation. But the portrayal must be in character with the type of personality the coach possesses. One coach makes a great success through calm, unruffled behavior, emphasis on creative strategy, impartial handling of men, and great mastery of details. Another is the fiery orator of the Knute Rockne tradition. The young coach must learn to select and adjust coaching techniques to his own temperament and his particular abilities. Knowledge, enthusiasm, and soundness of teaching methods he must have, but in the coach's teaching mannerisms, any imitations of other coaches must be colored by his own individuality, and supplemented by his own artistry.

Discussion Questions

1. How early in life can a child learn to swim? To skate?
2. How does the young child learn a complex skill?
3. How early in life should the children be encouraged to play competitive sports like baseball, basketball, or tennis?
4. At what age should a golfer begin practicing? A tennis player? A baseball player? A track man? A football player?
5. What are the arguments advanced *against* competitive sports for elementary school children? Against competition for junior high school children? Against and for interschool competition for senior high school girls?

6. What special arguments are advanced against contact sports for younger children?
7. What is the best age for success in track? In gymnastics? In football? In golf?
8. Does the age of beginning competitive sports lower the final age of success at competitive sports?
9. What attitude should the coach take toward childhood sports teams and competition?
10. Can teams learn well enough to win without coaching? Explain.
11. How does the coach shorten the time necessary for learning sport skills?
12. What are the three major problems of learning for the beginner in athletics?
13. Is relaxation in sports the result of "will power"? Explain your answer.
14. What do we mean by saying that the imitator does not see the act he is imitating in detail?
15. What is the best way to give the beginner a general idea of a skill? Of a game?
16. What is the best way to introduce to the boys a team play such as a five-man weave in basketball, or an off-tackle play in football?
17. What are the objections to beginning the teaching of sports by drilling on individual movements?
18. What is meant by the expression, "meaning in terms of game use"?
19. What is the reason underlying the use of the lead-up game to teach fundamental skill rather than the isolated practice of the skill?
20. When should the coach begin intense drill on specific and separated parts of play patterns?
21. How soon should the beginner be put into an interschool game? What factors vary the time at which he may be played for the first time?
22. Do boys learn faster by being "put under fire" as soon as possible?
23. In what sports has the content increased most rapidly during the last decade?
24. List the major subdivisions for the content in your favorite sport.
25. How does the coach determine how much content to include in a year's program for an interschool team?
26. Give several examples of strategy in sports.
27. Are the techniques of classroom teaching fundamentally the same as those of the teaching on the athletic field?

28. How much and what type of thinking does a boy do during active play in a team game?
29. Should the boy be taught self-analysis of his sports performance?
30. Should sports habits be specific and exact responses to specific and exact stimuli?
31. What do we mean by the statement that a skill becomes generalized?
32. Will the high school squad need guidance in observation of the play of college or professional teams?
33. What are the special advantages of a scrimmage-practice against an outside team from another school or club?
34. How detailed should the coach's analysis of a contest be? What results from the analysis does the coach pass on to the boys?
35. How does one determine the best length of time to practice the first team?
36. Do boys learn between practices? Explain.
37. What aspects make a skill hard to learn?
38. What is the teaching procedure if the boy is making a major error but is unconscious of it and thinks he is not so performing?
39. In what sports should the coach pay special attention to the practice of peripheral-vision seeing?
40. What are the best ways to familiarize your squad with means of playing against the next opponent's particular offenses and defenses?

Test Questions

1. Is there evidence that indicates that children could learn to swim or skate before they are two years old?
2. Does the young child learn such complex skills by analysis?
3. Have many of the champions begun to play their particular sport when they were in the primary grades of school?
4. Are there in existence interschool leagues for athletics at the elementary school level?
5. Is age of peak attainment in sports the same regardless of whether one begins practicing in his childhood or in his teens?
6. From a pure athletic viewpoint, should the coach oppose childhood competitive games between schools?
7. Do teams occasionally achieve high levels of skill without formal coaching?
8. Does the athletic beginner see the act he is imitating in detail?

9. Does the beginner tend to make more movements to complete an act than does the skilled person?

10. In general, is diagramming a play a more effective technique with low skill levels of athletes than a slow-motion walking through the play?

11. Should one begin the learning of a team-game skill by drill on the individual movements of the skill?

12. In general, is the lead-up game technique a more effective teaching method than isolated practice on the skill?

13. Does the best time for specific drill on parts come at the advanced levels of skill learning?

14. Does highly competitive game experience tend to hasten the learning of the beginner?

15. Has the amount of content to be learned by the school athlete, in football and basketball, remained relatively constant over the last ten years?

16. Should the athlete place his focus of attention on his movements during an athletic competitive performance?

17. Do sports skills tend to become less specific in details of performance as the athlete attains high levels of skill? (This question refers to adaptability of skill to changing conditions.)

18. Would it be advisable, if feasible, to have a preliminary team discussion of "what to look for, and at," before taking the team to observe a great college or professional team in action?

19. Does the rank of a young athlete's performance tend to vary somewhat against an outside team from what it was against his own squad members?

20. Is it advisable to have considerable clerical help in trying to analyze a team-game performance?

21. Does the conscientious athlete, on the average, learn between practices?

22. If the athlete is unconscious of a major error he is committing, may it be advisable to rehearse him in the error performance; i.e., have him practice the error a few times while attending to it?

23. Should both the dribbler and the batter (basketball vs. baseball) watch the ball?

24. Should one focus on a specific nearby point when practicing peripheral vision?

25. Is blackboard drill and explanation by the coach the most effective way to prepare for the next opponent's particular offense and defense?

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6

Feeling and Emotion in Sports

It's Hell to keep a team stirred up.

CONNY SMYTHE, Owner of the
Toronto Maple Leafs¹

Man acts as he feels, not as he thinks. If his reason tells him that impulsive response may defeat later wants, or bring him later discomfort, he adjusts his action to what seems to gain more of his desires in the long run. He is merely weighing his various feelings and wants to sort out the behavior most satisfying. This inhibition of immediate response is about the only victory man's higher mental processes have gained over his subcortical organization of emotions.

Man's power reserves. The human body contains latent power that may be evoked by intense stimulus. Evidences of such power have appeared in the supernormal manifestations of strength of a delirious patient, for example. Under the drive of war situations, men have carried comrades distances that would have been impossible under ordinary stimuli. Great fears and great emergencies have evoked phenomenal actions that are out of all proportion to what the same individuals are able to do at other times.

The physiological adaptations for intensely stimulated action in-

¹ Quoted from *Time Magazine* issue of February 27, 1950, page 54.

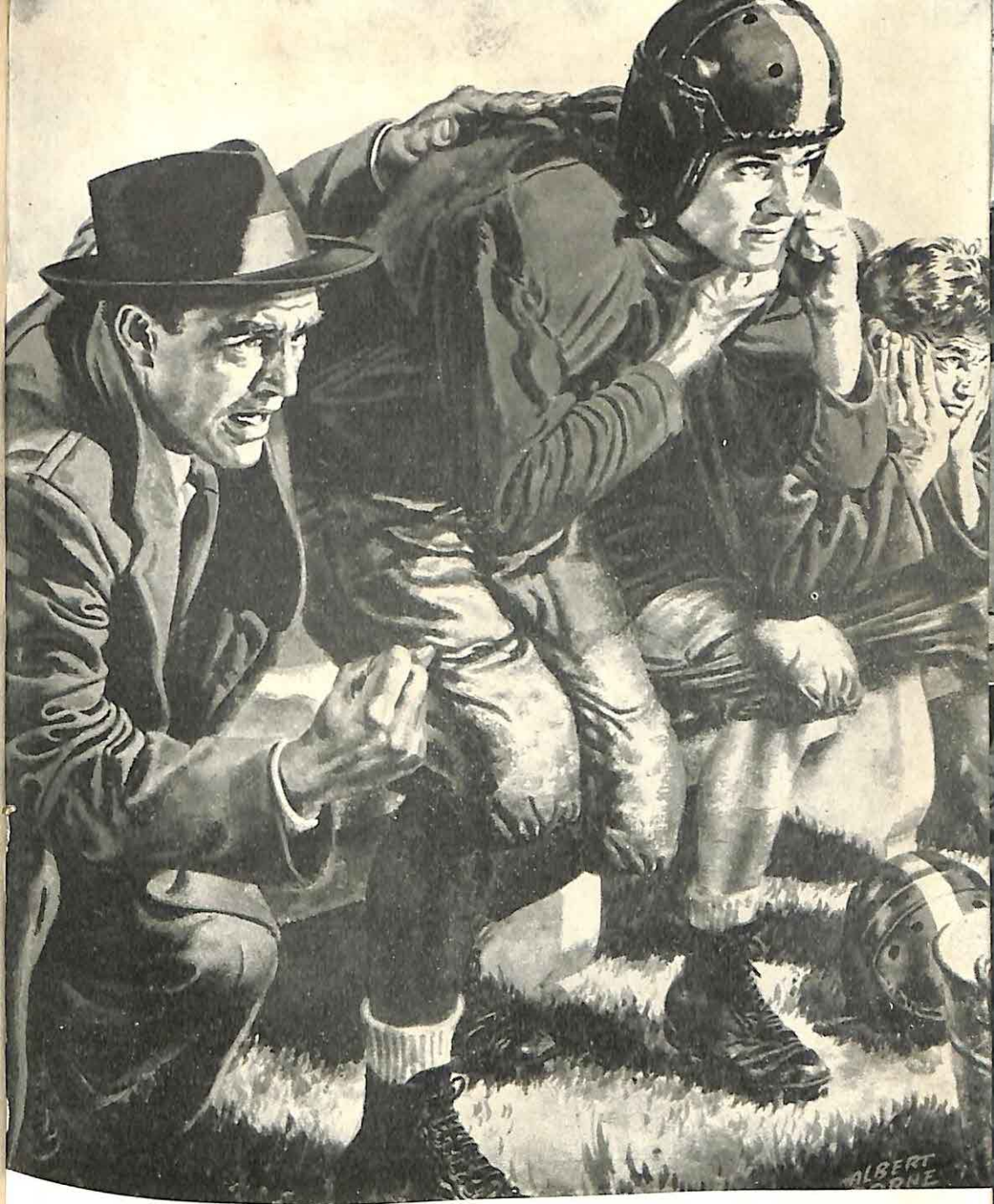
clude a faster and stronger beating of the heart, higher blood pressure, expanded air passages and faster breathing, and a release of special stores of energy. Some of this energy is stored in the muscles and much more in the liver. Under great stress, the sugar from the liver is poured into the blood stream to supplement other sources. The faster and stronger beating of the heart forces the food to the muscles needing it at a much greater rate. The higher blood pressure speeds up the tissue osmosis, the transfer of food and energy and the taking away of fatigue products. Fatigue is thus lessened, and less efficient action arising from it greatly postponed. The faster breathing and the wide-open air passages are means of making greater supplies of oxygen quickly available for blood absorption. In addition, the sympathetic nervous system stops digestion in the alimentary canal and slows up the canal's usage of the circulatory system—thereby concentrating all the processes of the body on the external, muscular expression. Even the brain is better irrigated by blood, and seemingly a little quicker in perceptual thought and motor response processes.²

Basic causes of strong feeling and reaction. Much intense motivation is based on man's need for prestige among his fellows. Youth earnestly strives for something that will increase feelings of security, self-respect, and confidence in being able to face the world. The human individual seeks the approbation and respect of others in an attempt to escape his own worries, anxieties, and inferiority feelings.

Fears, anxieties, inferiorities, and feelings of inadequacy upset the youth, make him restless or unhappy, and drive him to seek some form of assuaging such feelings. War and world disharmony contribute to such fears. The worries of the economic battle for subsistence and physical comfort, reflected in the home and family, are absorbed by the oncoming generation.

The communities of the low income brackets are full of frustrations and thwartings. Labor difficulties interrupt the workers' in-

² Consult W. B. Cannon, *Bodily Changes in Pain, Hunger, Fear and Rage*. Second edition. New York: Appleton-Century-Crofts, Inc., 1929.



A painting by Albert Dorne. (Copyright 1949, Fawcett Publications, Inc. Courtesy, TRUE, The Man's Magazine.)

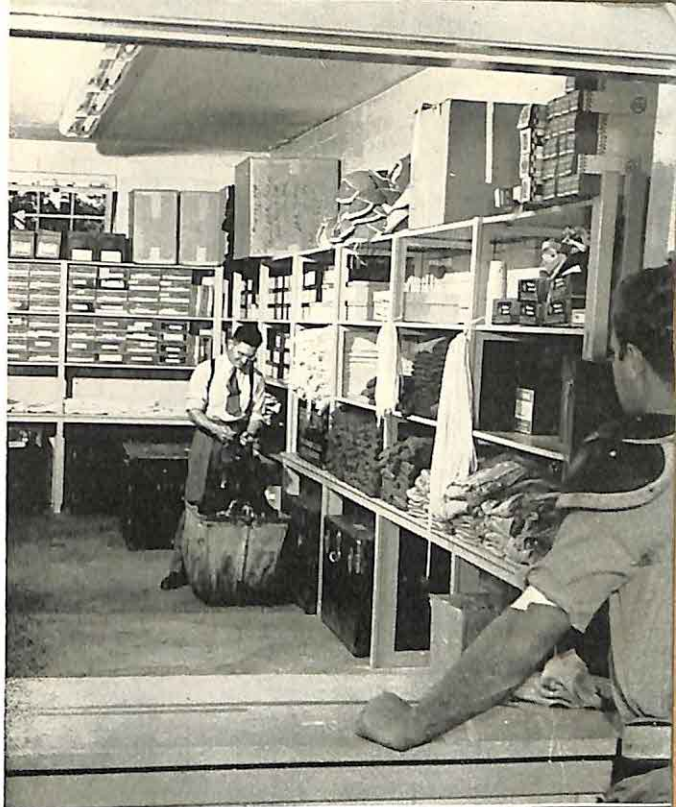


*Soccer develops great precision of
body control and foot movements.
(Courtesy of United Artists Corp.)*

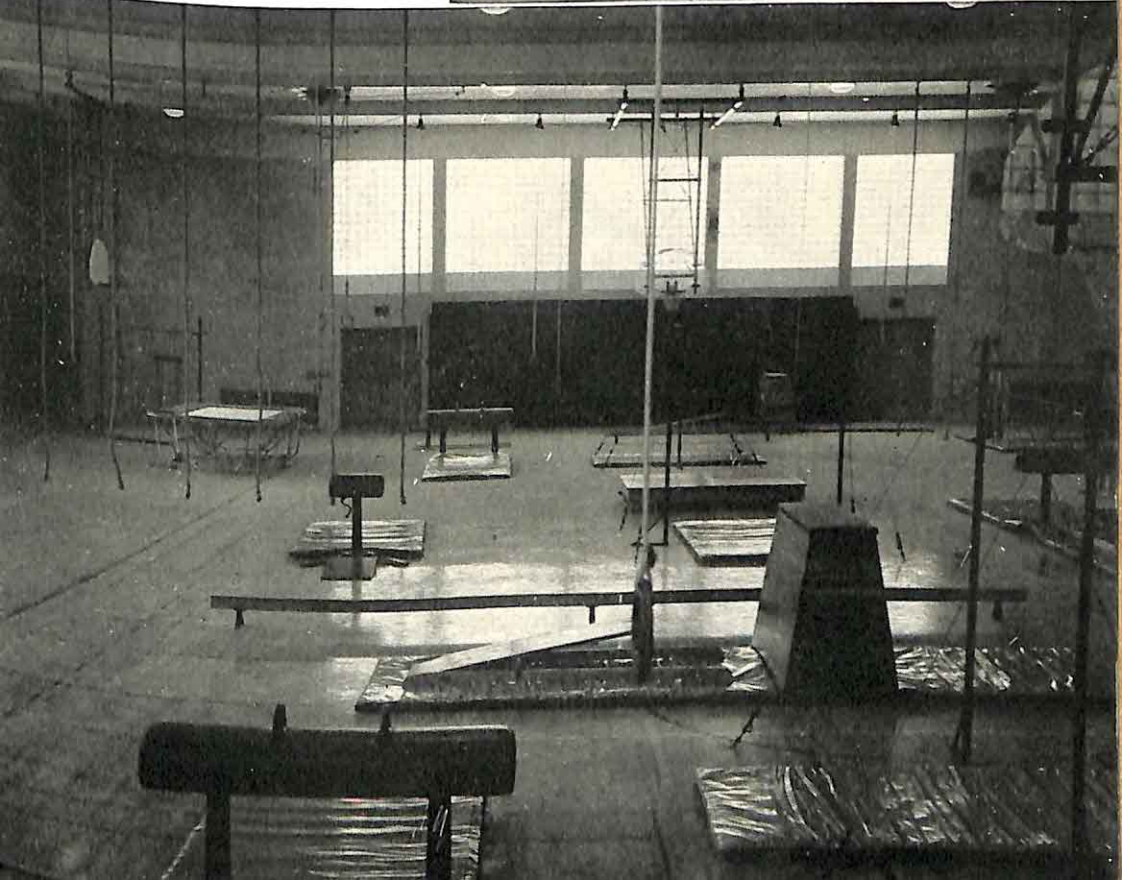


The training room.

The equipment room.



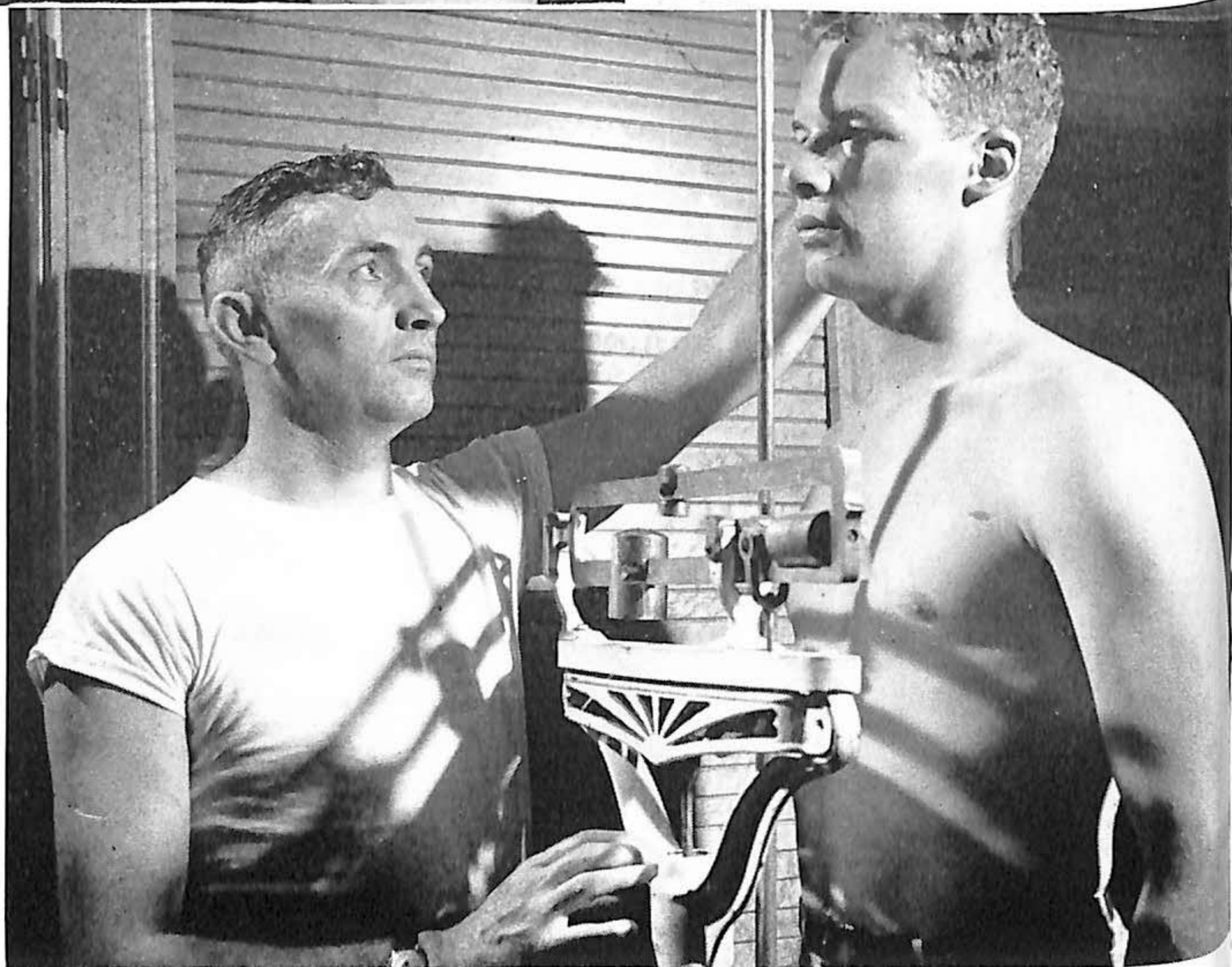
*The gymnasium. (Courtesy of
Scholastic Coach Magazine.)*





Preparation for an overseas trip.

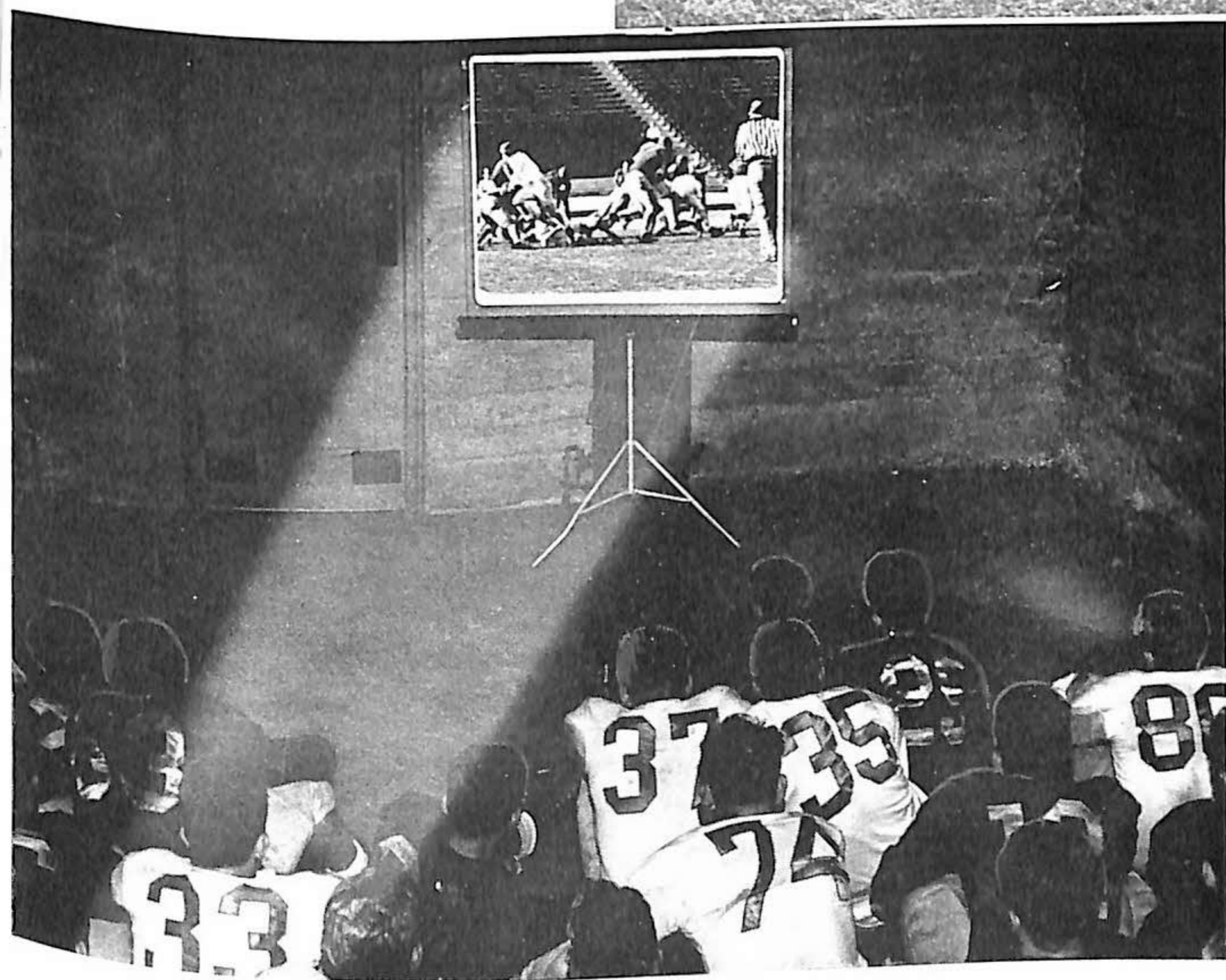
*An important part of the periodic
checkup. (Courtesy of The American
Red Cross.)*

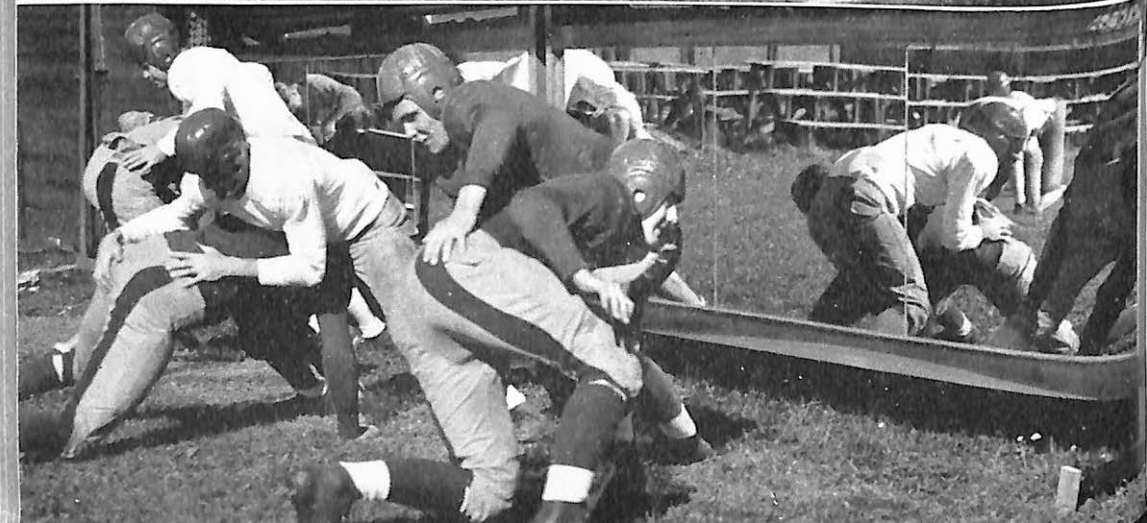


Early fall training.



Evaluation of play by watching movie playback of game is an important means of aiding player improvement. (Photo by Otto Rothschild.)





After a hard-won game.

(Left) Plenty of good food is important for the successful athlete. (Courtesy Lil and Al Bloom.)

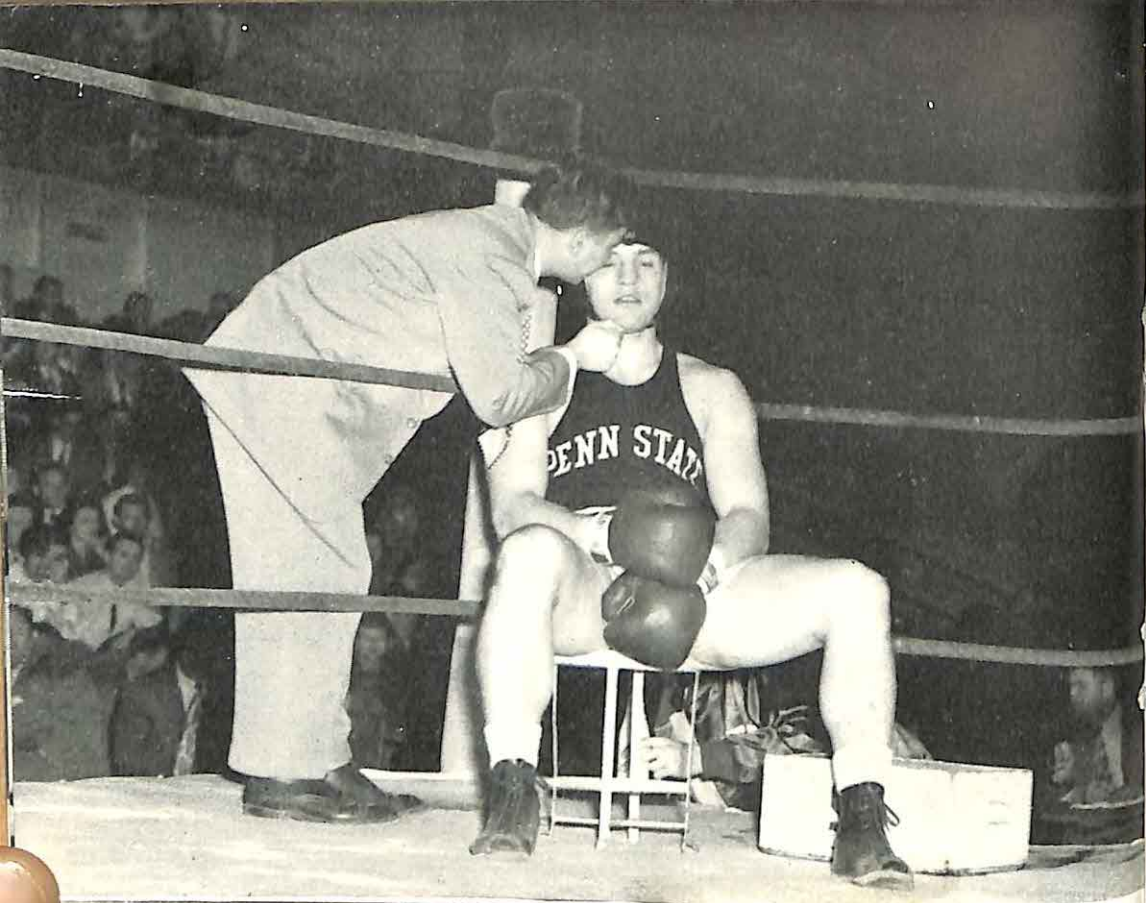


(Left) The love of athletic competition begins early. (Courtesy of Scholastic Coach Magazine.)

(Left) Mirrors are important as a teaching device. (Courtesy of Scholastic Coach Magazine.)



Cheerleading enthusiasm is a vital part of the game. (Courtesy of Eastman Kodak Company and National High School Photographic Awards.)

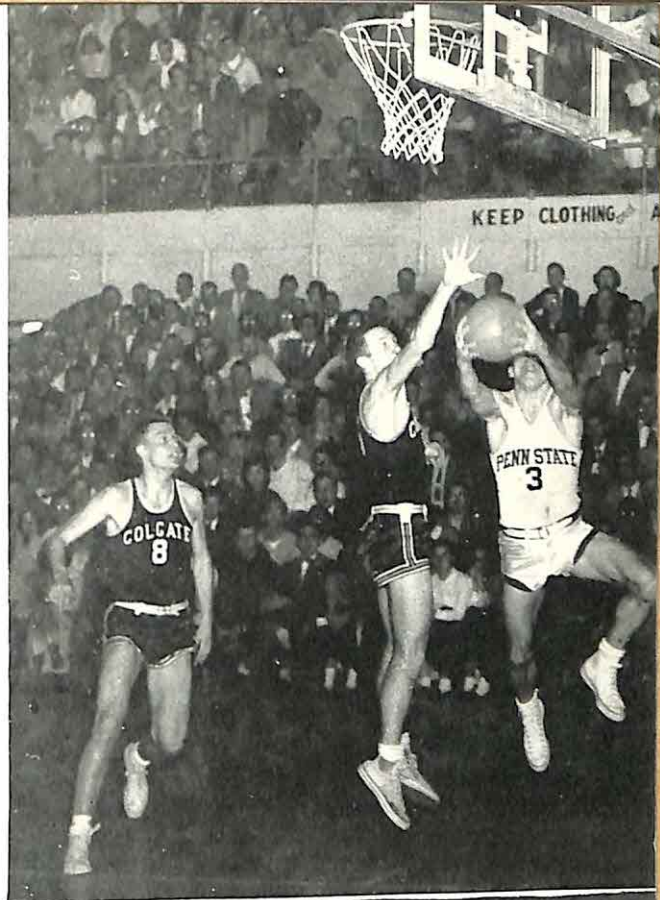


A word of guidance.

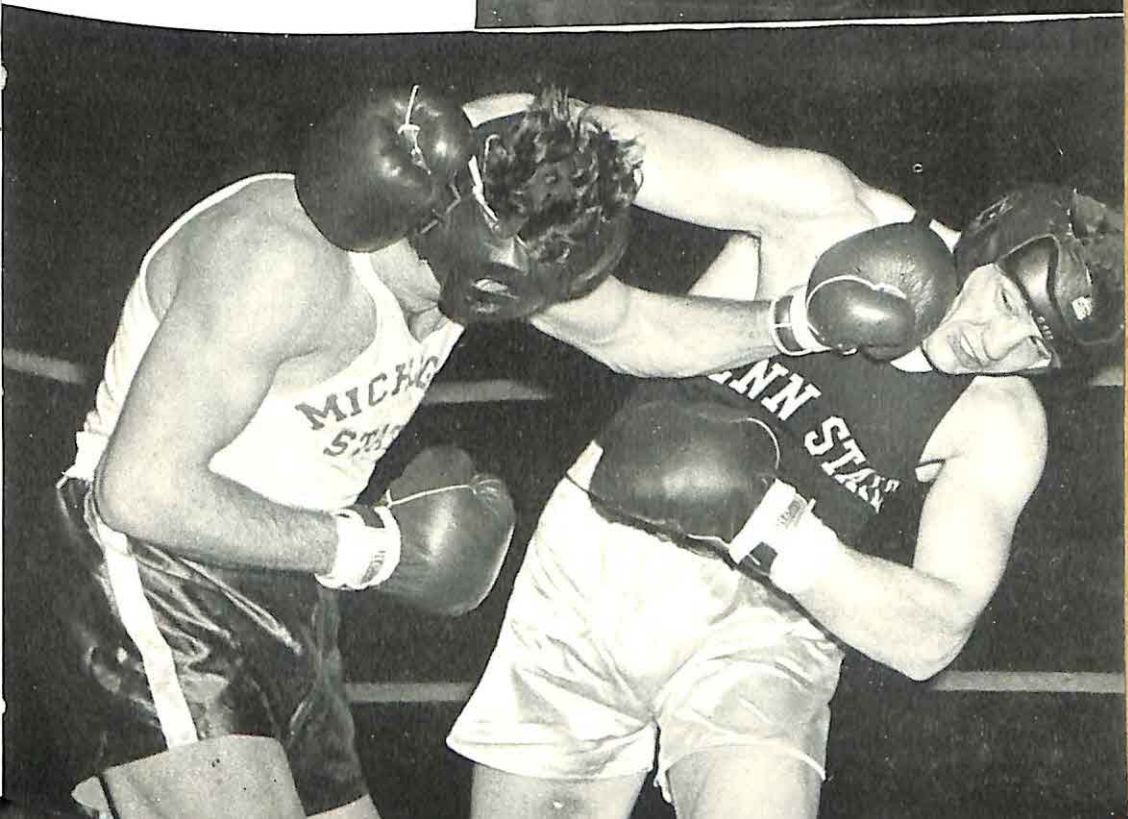


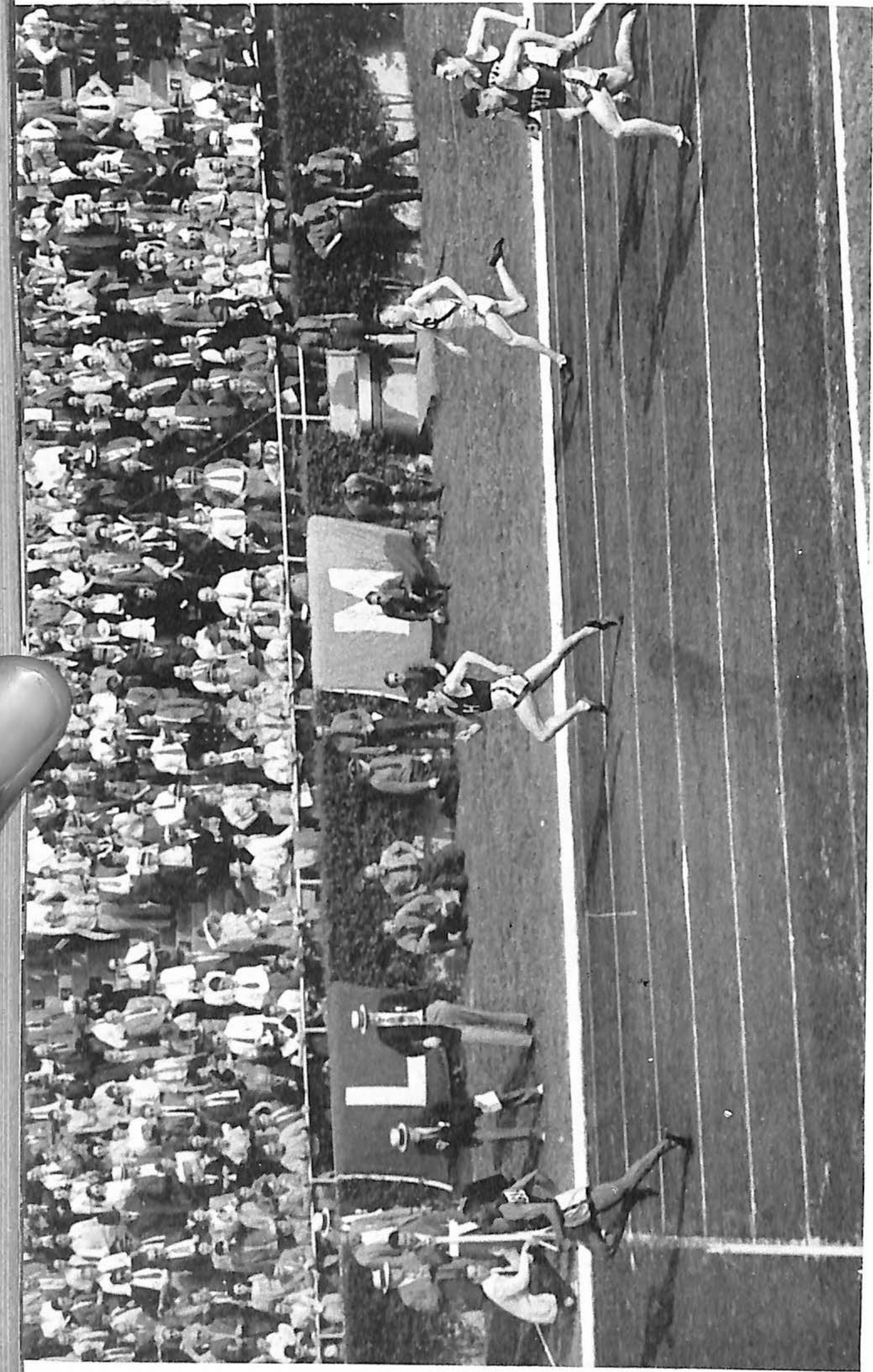
Good marksmanship results from careful training and practice.

The "hesitation" shot.



Scoring with a left.



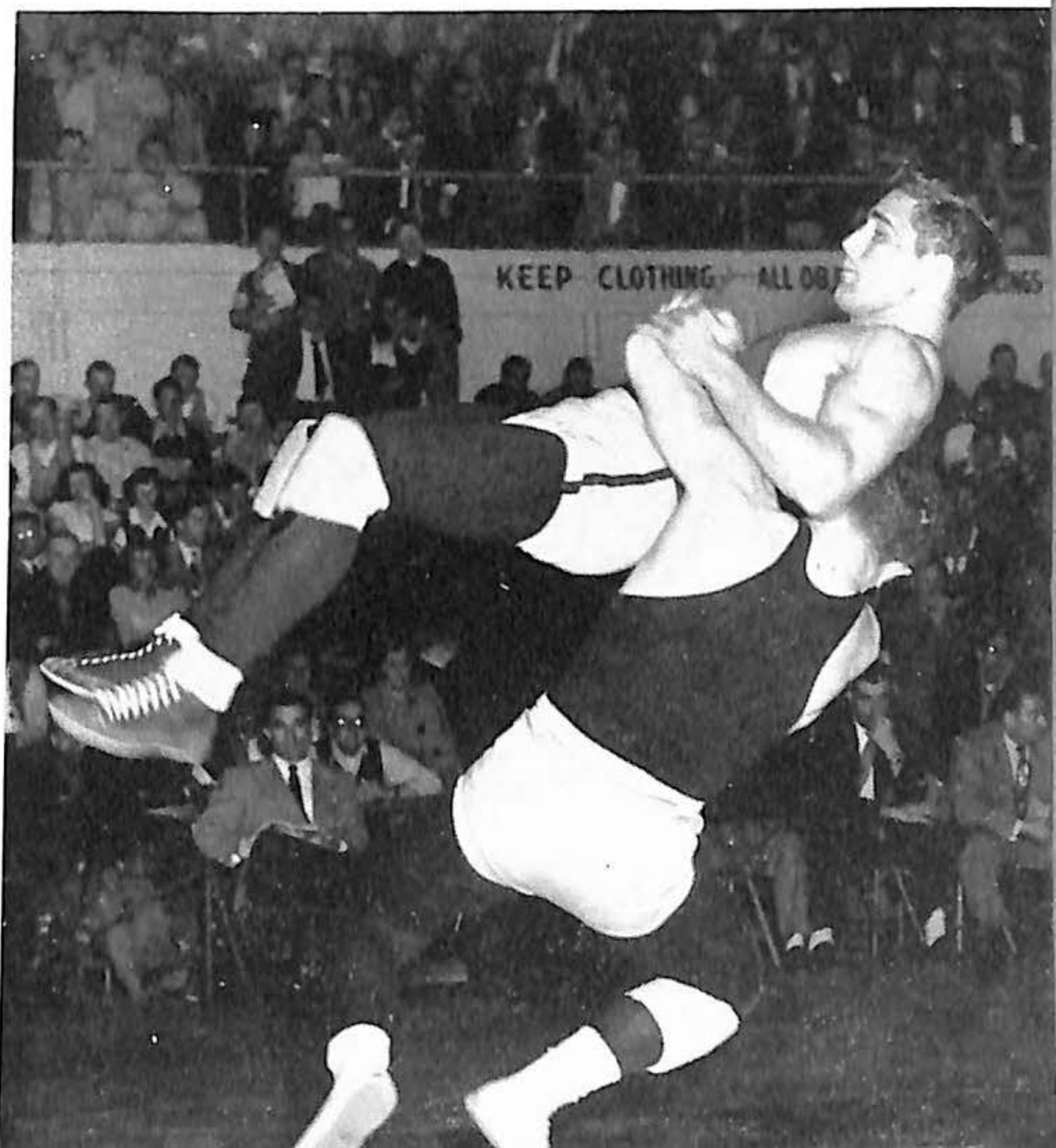


Ewell of Penn State finishing a 20 7/10" two-twenty.

*The colorful try is not always
the most effective. (Courtesy
of Popular Photography.)*



*Strength well applied in wres-
tling.*



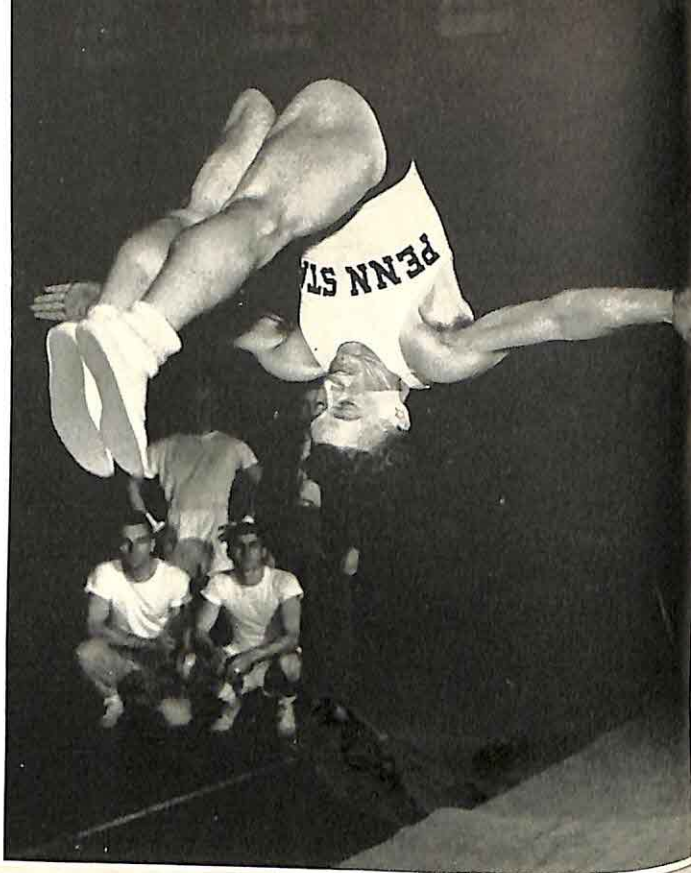


Muscle development, form, and endurance are important for world's great distance men. (Courtesy of Scholastic Coach Magazine.)



Pole vault. (A scene from "The Olympic Games of 1948"; a J. Arthur Rank production—Eagle Lion Films Release.)

Good form in tumbling.



Tense moment in a lacrosse game.

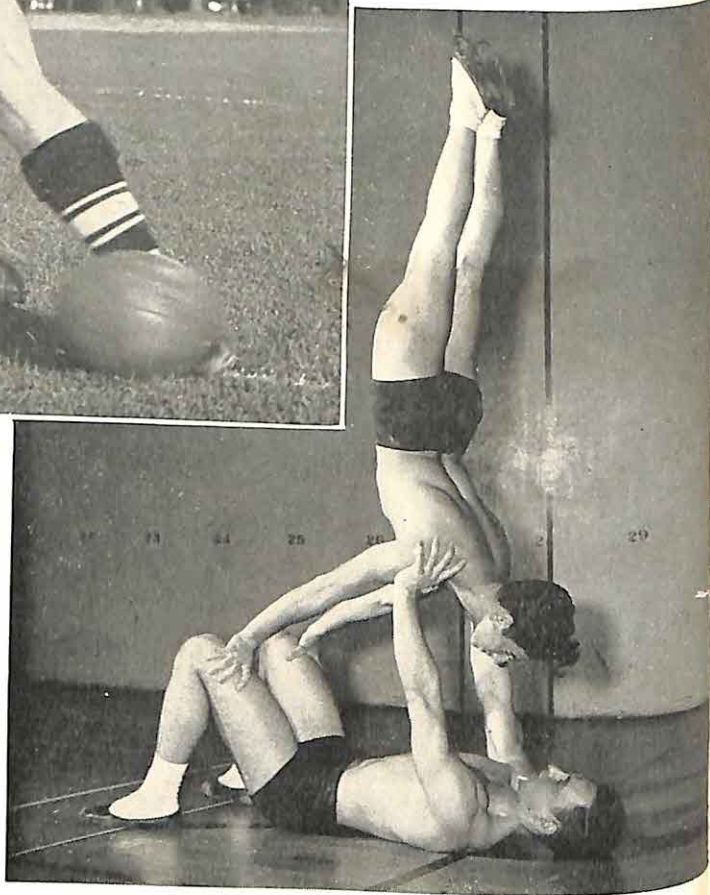




Beauty in form wins for the diver.



Delicate control in soccer passing.



The Shoulder Stand. (Photo by Ralph Zuccarello.)

comes. Work, when the men have it, may be mechanical, bore-some, or extremely annoying. There are repressed minority groups of different races struggling with poverty, language difficulties, adjustment in a new country, and the hostility of other competing groups.

The healthy and vigorous individual, frustrated and thwarted, tends to become aggressive and belligerent in an attempt to fight against conditions. This resisting, "fighting back," is a normal healthy reaction of a physically sound and energetic individual. Man adjusts to difficulties and obstacles by overcoming what he can, and expending the stimulated energy from other disappointments in substitute ways that are also substitute satisfactions.

The young boy is looking for some escape from his frustrations and feelings of inadequacy. He wants social approval and recognition. He must attain prestige among his associates by some means. He dreams of successes and frequently fixes on some hero to emulate in his striving for success. Little realized sex urges drive him to seek some form of self-expression that will gain the admiration of the other sex. His urge toward physical activity and his restlessness cause him to direct attention toward some physical achievement as a means of gaining recognition.

The boy soon learns that he can gain prestige among his associates by demonstrating physical prowess. His natural reaction of resentment and his desire to strike back against the obstacles that impede him are encouraged by the social environment in which he finds himself. The aggressive fighter seems to be respected and feared and even admired.

Athletics, an outlet. In seeking an outlet for his repressions and frustrations, the boy finds athletics. Sports permit aggressive expression and vigorous attempts to demonstrate superiority in a way that gains tremendous prestige. The adult world is interested in athletics. The newspapers and radio carry daily sports reports. The people of the community read the sports sections of the newspapers avidly. The school prides itself on its achievements in athletics, however small they may be. The social milieu is busy

promoting and stimulating athletic successes. The school is organized to sing sport songs and to give sport cheers as encouragement to its athletes.

The common people are wrapped up in sport enthusiasms. They have their favorite baseball team, their favorite basketball team and their favorite football team. Almost every community has its athletic leagues. The youngsters learn rapidly to fit into some team and to catch some of the prestige even if it is only because of one "nice" basket thrown, one first down made, or one hit "with a man on" in baseball.

The community tends to become united in its sports enthusiasms and its endorsement of local teams. This enthusiasm gets very intense in communities small enough to permit total group acquaintance and shared feelings. In the very large cities, there may be several groups with somewhat different enthusiasms and loyalties within the same city. In the communities of lower economic status, less happy social adjustment, or more uncertain business conditions, athletics become the outlet for the pent-up energy caused by monotonous, drab existence. The resentments and belligerencies, piled up by continual annoyance from working conditions, unpaid bills and home worries, express themselves vicariously through the battles of the boys on the athletic fields. If the boys win, the community enjoys an assuaging of its inferiorities and a period of exaltation out of all proportion to the importance of the success. If the team loses, the more aggressive community members may express their energies and disappointments in violent protests or even physical attacks on officials, team members, or followers of the opposing team.

Intense sports loyalties seem to drive fans to physical demonstrations of their resentment at lack of success. Such antagonistic expressions are more violent in communities whose people enjoy fewer successes and fewer comforts in life, and who feel inwardly, therefore, that they have less prestige. The underlying cause may be economic insecurity but more likely there will be a complex of motives. An environment of mixed population, high competition, and none too restful living conditions may contribute to the in-

tensity of feeling manifest in the behavior of the Brooklyn baseball fan, for example.

Sports like football, wrestling, and boxing that require long, gruelling practice hours, seem to have a relatively larger proportion of competitors from families of lower income or lower social status. These boys go through the grind of practice in order to obtain social recognition. On the other hand, boys from older American families, particularly if some wealth has been accumulated, seem to prefer sports like golf, tennis, and swimming. These sports can be enjoyed more leisurely. Many boys feel little urge to go out for sports if they have already attained social prestige through nice clothes, owning a car, and the other recognitions that go with affluence.

"Spectatoritis." The enthusiastic spectator at an athletic contest is experiencing vicariously much of the joy of intense competition. He does get "stirred up" emotionally. Urinalysis of spectators reveals quantities of non-utilized sugar that have been released by excitement (adrenal gland stimulus) but not burnt up by exercise. The player burns up his extra sugar to furnish playing energy, but the fan discards whatever amount he does not utilize, in boisterous behavior.

The fan does go through a vigorous type of experience. Medical men are accustomed to warn heart cases to stay away from ball games if they find the games exciting. Every season, the newspapers report some cases of individuals who succumbed because their weak hearts could not stand the excitement. For the general public, spectator sports is the only type readily available. This vicarious experiencing shakes them out of the dullness and drab monotony of their daily grind, serves as a kind of emotional catharsis, exhausts a lot of tensions, and sends them back to their perhaps none-too-important niche in society feeling that life is not so bad after all.

Admiration for physical achievement. Great admiration for physical achievement has other causal factors. In addition to the tendency of the active but frustrated individual to express himself in physical aggression, there is a natural human tendency to enjoy

physical expression of one's self. Pride in oneself and in one's bodily development combine with hope for admiration by the other sex. Crowd reactions are likewise important in influencing the feelings of youth. The radiation, the infusion, the contagion of mass feeling and mass enthusiasm is caught by the young boy. Community enthusiasms over athletics, even, at times, community hysteria, infect the younger generations with a feeling of an importance of athletic success beyond what any reasoning process indicates. Of course, to try to explain emotional behavior as if it were based on reason is contrary to evidence from human behavior. An explanation of mental processes on the basis of previous emotional bias would be in closer conformity to what one can discover about mankind.

International conflicts are another causal factor back of the great interest in athletics. At least once each generation man has been plunged into war. War training and war propaganda have always stressed physical fitness, physical development, and physical prowess. The war training programs have included extensive athletic participation as an aid to conditioning and as a means of recreation. The *physical* becomes the dominant theme during the danger, the insecurity, and the neurosis of war. When one anticipates trouble, he tends to feel a little more secure with a superb physical specimen of man as his partner.

Size and personality. The importance that individuals place on actual physical size as an indication of power is easy to observe. Consciousness of the lack of impressive size changes an individual's personality. Napoleon, Stalin, Stephen A. Douglas, Winston Churchill, and dozens of other historical figures were or are relatively short. In each community there are men below average size who tend to become more aggressive, more outspoken, more quick to assume leadership. Perhaps this aggressiveness began as an attempt to compensate for inferiority feelings. Attempts at compensation produce drives toward greatness that are much less forceful in larger men with more prestige from physical size. The quarterback on many a football team and the floor leader on many a basketball team have been little "cocky" fellows who drove and

bullied their larger, more self-satisfied teammates onward to success.

Sex often furnishes a drive toward sports participation. Part of this drive comes from a strong desire to impress the other sex, and part from a sublimation of the excess energy. The superb fitness engendered by the athletic participation is likely to accentuate energy supplies. Energy is in its nature the same, but it may be stimulated by many different types of drives and expend itself in many ways. A surplus of energy in the individual makes him stand out. His personality is suffused with a dynamic liveliness that attracts attention. Being healthy and full of energy, he is more likely to be pleasant, joyous, and good company. His fitness, if expressed through the physical in some form of athletics, seems to be particularly striking to the other sex.

Athletic ability adds to the boy's popularity with the other sex as most coaches and managers will testify. At times this attractiveness creates some difficulty in keeping the athlete's attention focused on the sport. If the girl is enthusiastic about athletics and much interested in having the boy succeed as an athlete, she is very helpful as an added and powerful incentive. The other extreme in which the unknown female shoots the first baseman because she is unable to get him out of her mind is a rare case.³ In general, fans of the other sex are strong incentives toward athletic glory.

Inadequate response to intense stimuli. The individual may be intensely stimulated without having learned a satisfactory form of expression for his emotions. Overstimulation without adequate, learned response produces many types of behavior. One response is temporary inactivity. The person concerned has a general diffusion of tension throughout his musculature, a high degree of excitation without any immediate outlet for his energy. Such behavior phenomena are variously described as "paralyzed by fear," "frozen up," "buck fever," and "being in a fog." Sometimes the coach misunderstands the nature of this emotional tension and rebukes the player for "standing around and not trying." The boy is not lazy and indifferent. He is just the reverse—so concerned

³ Reference is to the shooting of Eddie Waitkus of the Philadelphia Phillies during the 1949 baseball season.

that his system is flooded with conflicting, antagonistic muscular tensions, and his mental processes are chaotic. If he were less concerned, he might do much better.

When the boy tries to learn under overexcited conditions, he learns very slowly or not at all. He behaves somewhat like the overstimulated white rat in maze learning experiments. When the false alleys in the learning maze of the white rat are wired with electricity to shock the rat slightly, the rat learns more rapidly to avoid such false paths. When the intensity of the shock in these cul-de-sacs is increased up to a certain point, the rat becomes overstimulated, runs around wildly and ceases to learn. In the beginning athlete, the start of overexcitation is indicated by overhesitation, tenseness and added awkwardness, and confused, ineffective movements.

The overstimulated performer has more energy and pours more into his movement patterns so that they change. He adds many additional movements. Without the proper previous conditioning, these modifications are very likely to be chiefly in the direction of less skillful performance. When the individual has no learned way to express physically his overstimulus, unpleasant feelings are likely to accompany the "stirred up" state. He may feel weak, faint, or even nauseated. Sinking feelings, weakness, pains in various parts of the body, and vomiting may occur.

When the overstimulus occurs in sports in advance of the date of the contest, the novice may worry and fret, lose sleep, be unable to keep food in his stomach, and show all signs of real organic sickness. The extreme fear of failure has caused a psychic sickness that is the body's subconscious attempt to escape intolerable feelings of worry and anxiety. An occasional athlete of varsity calibre will "worry himself right off the team."

Superstitions among athletes. The anxiety and worry of the emotionally aroused athlete is the underlying cause of the origin of many superstitions. Any regular behavior routine, any emblem, any favorite piece of equipment or special article of clothing may become associated with "a lucky feeling." Superstitions are attempts to reassure oneself by a type of necromancy or false magic embodied

in some symbol. The need to escape the unpleasant worry and fear, in order to enjoy any degree of comfort, is real. The symbols adopted may be any chance behavior or any object associated with a former success. Feelings about good luck symbols may be passed from one individual to another.

A few examples of extreme cases of superstition development will serve to illustrate the origin of these eccentricities. One track man began to fall off in his performance late in a track season. After investigation of possible causes, the coach found that the athlete was eating nothing but apple sauce from Thursday until Saturday evening of each week. It seems that he had arrived home for lunch the day of the first meet only to find his mother busy with the washing and unable to prepare his lunch in time. He tried the refrigerator as a source of food and found nothing there but apple sauce. Apple sauce was his lunch and he won his races that afternoon with ease. The next meet was a harder one and, worrying about his diet, he decided to eat only apple sauce all day. He reasoned that it had worked for him the first meet and therefore should work for the second. He won his races in this second meet. He was less successful the third meet, so he extended the routine diet back to cover Friday and Saturday. By the time the coach discovered the superstition, the boy was really suffering from malnutrition.

Articles of clothing worn in a successful contest often become imbued with the good luck symbolism. One athlete who won in the Penn Relays in Philadelphia during his high school days, insisted on wearing the same trunks all the rest of his career through college. He would not permit the trunks to be washed lest they lose their good luck aura. By the time he left college, even his teammates were aware of the aura—they could smell it.

Superstition seems to attach itself to people in highly emotional kinds of work, regardless of their intelligence or understanding of the nature of the phenomenon. One college coach trained in the field of psychology reports that he has to fight himself at times to prevent adoption of superstitions. He said, for example, that he found himself too busy before one critical game to have time to

shave. The team unexpectedly won an important game. For several games afterward the coach found himself with a great reluctance to shave on the actual day of the game. He understood what the feeling was and how it had originated, and forced himself to shave in spite of his obsession. The feeling of reluctance and of risking his luck recurred at times the following year when his appearance indicated the need to shave the day of a game.

In the excitement just before a ball game, players are very susceptible to "luck feelings." The warming-up process itself gets irrationality attached to it. Such statements as, "Don't sink all your putts in practice," "Don't get all your strikes in the warm-up" (bowling), and "Don't get all your base hits in (batting) practice" are indications of anxiety breeding superstition.

Rabbit's feet, horseshoes, and four-leaf clovers are examples of rather common luck symbols. For a number of years, "the same old hat" became a charm essential to be worn by many coaches as they sat on the bench at a game. There are superstitions of all kinds in sports. Athletes may have a set way to put on their shoes, or a set way to lace them. They must jump over the side line and not touch it, or they must touch a certain base on the way in from the outfield each inning. They lay their glove in a certain place and no one dare touch it. Mascots become luck symbols. Even spectators endow themselves with luck symbolism. They tell the coach that he wins every time they are present and feel they are bringing the team good fortune by the mere fact that they attend the games. They would be highly insulted if one were to assure them that the only fortune they brought the team was the \$2.20 they deposited at the box office. The reverse feeling also occurs in an occasional fan. He attends a couple of games and the team loses. Then he is forced to miss a game, and the team wins. He refuses to attend any more games lest he be a hoodoo.

The attitude of the coach might very well be one of discouraging superstition. The very assurance can go against the player if something upsets his luck routine or someone mislays his luck piece. The boy who needed the superstitious reassurance is now more

upset than ever. The opponents may kick their "untouchable" gloves intentionally in order to upset them. The old articles of clothing do not look well and, in case of trunks or jerseys, certainly should be changed for health reasons.

In trying to prevent excess superstition, the best procedures include: (1) a sane reasonable attitude by the coach, (2) explanation of the nature of superstition and its causes, (3) a focus of attention on what really wins or loses the game, and (4) an absence of examples of superstitious behavior in the coach. Forbidding the use of luck tokens is not an effective reconditioning technique. Emotions and anxieties are not banished by orders. The arbitrary order may increase the anxiety of the boy in a time when the foolish symbolism might as well be overlooked.

Bad luck symbols can become attached to almost any behavior or article that was present at the time of a defeat. Any action that preceded the defeat may be considered the cause. "That which follows is due to what just preceded it" finds acceptance in much of man's thinking.⁴ Things associated in time or place with the misfortune may be considered to be causal and labeled "unlucky."

An opponent who defeats one's team several times in succession becomes a *jinx* in the newspaper stories. It may well be that the winning team was superior in talent and ability every time; nevertheless, some mystic magic is attributed to the victors as the real cause of their victory. Not superiority of the opponent in skill and ability but an evil fortune visited on the defeated team by some offended genie has been causing the losses. No matter how well the boys play, they will lose because they are jinxed. Such beliefs may infect the losing athletes and cause them to give up when they still have a chance to win. Usually there is no thought process at all attached to the jinx feeling.

There have been cases in which a team was so impressed by the opponent's reputation and record that they believed themselves unable to win. Coaches feel that it is extremely difficult to obtain a team's best efforts if they go into a game with the assumption that

⁴The old *post hoc, ergo propter hoc* fallacy in logic.

the opponents are far superior. The coach who has a good team in a small school many encounter this attitude-hazard in his team when he takes them to play a much bigger school.

Emotion upsetting to sports habits. When the athlete is rather well trained and habituated in sports performance, he tends to express the energy of his extreme excitation through his learned responses. If he is too greatly concerned about the outcome and begins to encounter some small indications of lack of success, he may lose much of his habitual efficiency. Coaches know the type of ball player who is all right for the game if he gets off to a good start, but who will have a "bad day" if he fails the first try or two. It may be that he is "a hole down" in golf, that he misses his first two or three tries at the basket in basketball, that he fumbles the first pass in the backfield in football, or that he strikes out the first time up to bat in baseball.

Those individuals seem to try harder. They become more tense and attempt to change the timing of their habits by forcing conscious, voluntary guidance into their movements. If the contest is such that they can be replaced by a substitute, they may be calmed sufficiently to be effective later. If the contest is golf, for example, or wrestling, they must be left to continue until they take their licking, inasmuch as no substitution is possible. Such sports expressions as, "He is a front runner," or "He is beginning to press," are attempts to describe this phenomenon of an athlete's maladjustment to extreme excitation. Experience, less intense conditions, and kindly counsel by the coach are needed. The nervous athlete needs training under a little less pressure until he learns to adjust his play.

Conditioning for peak performance. It is a well known fact that intense excitation occasionally results in improved performance. The individual may act more quickly, act with greater force and precision, or with exceptional insight into the needs of an emergency situation. This superior performance, resulting from strong motivation and the consequent unleashing of physiological reserves of energy, is what the coach tries to draw from his athletes.

The process of conditioning a squad so that a certain contest

will draw forth superb performance is called in sports circles "getting set." The preparation includes specific planning and practice with a specific opponent in mind. Specific offenses, specific defenses, and specific strategy to use against the opponent are rehearsed. There is a conscious promotion of emotional attitudes toward the athletic adversaries and toward their actions. The practices are accompanied by reiteration of avowed purposes, statement of names of specific opposing players, dramatic presentation of opponent-players' characteristics and habitual actions. Pictures and records of the opposing team are placed on the bulletin board. The scout describes the opposing players individually with the addition of much picturesque and graphic detail. The coach puts the boys through a grim and determined series of preparatory practices. This practice of techniques to foil the opponent and triumph over him is often a masterful achievement in emotional conditioning.

The emotional conditioning described in the preceding paragraph takes time. A week seems to be the minimum of time in which any significant amount of appropriate action can be tied up with these intense drives. Longer periods than a week are desirable. A last day or hour of stimulated emotional fervor not preceded by exact training may be worthless, or even harmful. Lack of specific practice of desired behavior may result in wrong action, with disproportionate effort by the athlete during the game. The football lineman may be "mouse-trapped"⁵ on his charge across the line. Under the stress of great emotional excitement, he charges harder the next time and is "mouse-trapped" more easily. Moreover, the boy's energy may become exhausted through his frantic efforts to overcome his failure. After a few games of intense stimulation without specific training, specific preliminary guidance and conditioning, the young athletes become negatively adapted to the coach's emotionalism.

At one time, the custom of football schedule builders was to try

⁵ "Mouse-trapping" refers to a type of blocking in which the opposing linemen are permitted to charge through the offensive line and then hit from an unexpected angle by a backfield man. The back often uses the momentum of the charging lineman to advantage and rushes him completely past the ball carrier.

to have one game at mid-season that demanded a team's peak performances, and another at the end of the season. Today, most teams have so many hard games that they do not dare to put too much emphasis on special ones. They condition week by week for each game in its order. The process of "getting set" goes on but, for most games, at a less intense level of excitation. Usually some arch-rival stirs them to unusual heights of determined preparation. During the 1949 football season the United States Military Academy at West Point played many hard games, but they admittedly placed greater emphasis on the Michigan game than on many others. During the 1948 football season, the United States Naval Academy at Annapolis had a poor season, but they regained great prestige by "being set" for an extremely strong West Point team and thereby gaining a twenty-one to twenty-one tie.

Specific rivalry. The arch-rival is frequently already attached to many emotional stimuli. The coach's problem may be to give the specific and exact practice but to keep the boys from any greater degree of stirring up. The newspapers, the student body, the parents, the people down town, and all the old alumni keep stimulating feeling over the game. Old games and old incidents between the schools are told, retold dramatically, and usually exaggerated. The crowd excitement is contagious—so contagious that the coach may have to protect the athletes from such high degrees. The coach may use quieting personal talks, attempt to focus the boys' attention on other things for a while, take the boys to a relaxing movie, or take them out of town away from people until game time. The one thing that the coach is reasonably sure of, is that the arch-rival opponents will be highly excited, grimly prepared, and probably will play better than they have done previously during the current season.

Limit to effective excitation. It is the responsibility of the coach to try to determine how much stimulus the boys can endure without becoming overtense, overexcited, and upset in performance. The more stimuli they can endure and the more they can continue to direct the aroused energy into appropriate actions, the more superb those actions are likely to be. But there is a limit to

effective excitation beyond which inefficiency begins to creep into performance.

Propaganda for emotional arousal. All the techniques of propaganda are utilized to stir up sports feelings. The radio and the press send out a barrage of material. Posters and pennants are displayed in dozens of conspicuous places. Slogans containing avowals of victory, and statements of intent (frequently couched in words that pun on the other school's nickname) appear on school bulletin boards, schoolroom walls, sidewalks or fences, and the jalopies of the students. Examples of such student expressions are, "Sink the Navy," "Stem the Tide" (Alabama), or "Squeeze the Orange" (Syracuse). The opponents may be pictured as villains, although better educational practice has discouraged such an approach. The students hold mass meetings in which they praise their heroes and pledge united support in cheering on their team. People of prestige from the alumni or the town are brought in to make speeches of inspiration and add to the feelings of importance of the "cause."

Principles of fair play. The school has the responsibility of seeing that manifestations of sports enthusiasms do not break all the rules of courtesy and real sportsmanship. Athletics can be played quite intensely and yet quite fairly at the same time. Hard play is within the realm of earnest endeavor. The furnishing of rugged competition is expected from, and admired in, a worthy opponent. However, attempts to injure an opposition team-member, just because he is an excellent player and may aid the adversary in winning, should be strictly forbidden by every coach. Almost without exception school and college coaches enforce fair treatment of the opponent, but with the finest of opponents, aggressive battling is expected, is a part of competitive sports, and may produce injuries. One can not take all the danger out of sports. Part of the thrill involved in contact sports is the danger of some pain or injury. One value of the game may be its training of the boy to take his bumps. Life after he leaves school will not be easy nor will it be without suffering.

One real experience in the realm of school rivalry, school loyal-

ties, and athletic feelings may clarify the above points. Two neighboring towns in New York State, typical rivals as such schools usually are, had the misfortune to let the crowd get out of hand and start a fight after a football game. The fight was quickly quelled by the law officers, and no serious injuries occurred. Those who were involved in the fracas were able to go home to their respective towns and boast in the poolrooms and bars about their achievements in the fight. The athletes from the two schools were not involved in the squabble.

As the game between the two schools drew near the following season, the school authorities decided to have a friendship banquet on the Wednesday night before their Saturday game. The respective school principals hatched out the idea as a peace gesture to impress the rowdy crowd and thereby prevent another outbreak of hostility. The coaches and the players were informed of the banquet on the Monday night preceding its occurrence. Needless to say, good coaches and good athletes are not interested in attending banquets during the week of a hard football game. However, cooperation with the administration is essential and so the banquet was held. After the olive branch had been waved adequately and the dove of peace had dropped his usual tidbits, the opposing captains were called on to give the final pledge of amity. The visiting captain spoke first and gave a prepared statement in a few short sentences. The essence of his contribution was the expression of somewhat noncommittal thanks for the friendly overture.

The home team captain was called on last. He had been unrehearsed in his part so told the truth as he felt it. He said: "We are glad to have you fellows over here with us to eat. You have a lot of good guys and a real good ball club. We are honored to have you here. This friendship stuff is O.K. but I want you to know that when that whistle blows Saturday, this peace bird goes out the window."

That speech completed the banquet and disappointed a few academicians. The athletes of both teams understood that the game would be an earnest, hard fought contest. Neither team

had any animosity toward the other; but neither team planned to be lulled into less strenuous efforts to win in order to seem more friendly to the opponents. Neither team would have respected and admired the other if such had been the case. A group of boys made up from the two teams went to college together the very next season and roomed in the same suite.

Pep rallies. Student pep meetings seem to be of some value in inspiring high school boys toward greater efforts. The players who are already overly excited about the game may need a private, calming talk from the coach. The attendance at the pep meeting can be explained privately to them as a duty that should be looked on by "this superior man of the world," the athlete, as the behavior of overly excited children who really do not understand what goes on in an athletic contest. On the other hand, the phlegmatic boys may profit by catching some of the student enthusiasm. The substitutes may gain some badly needed reward by this bit of recognition. Encouragement helps these boys who have been beaten down by the first team all week and left to sit on the bench on Saturday. Small colleges where students all know each other and where a total group unity is possible, seem to be able to enhance the athletic morale by student mass meetings. The pep meeting, or mass meeting, is becoming less and less a part of the large university life.

Student cheering. Organized cheering is reported by some athletes to be helpful to them. The "go-go-go" chant as the boy climbs the rope in gymnastics, or as the football team gets deep in scoring territory, is an example. Some rope climbers report a feeling that the chant incites in them a shade greater effort. Some football men think the chant keeps the blockers expending their utmost efforts instead of "letting down" a little.

The chant of "Hold that line," or simply, "Hold them" is employed by the supporters of the defensive team. The very fact that many teams can make such determined goal-line "stands" on the defense would seem to imply an aid from special emotional stimuli. Of course, the defensive backfield men are closer to the scrimmage line since the defensive area necessary to be covered by

the eleven men is less. Even so, powerful teams that have driven past the midfield with ease are often held without progress for four successive downs by such goal-line "stands."

The evidence is slight and entirely subjective concerning what student cheering does to a team. Many coaches think that the closeness of the home crowd, the deafening roar of the cheers when the home team performs well, and the razzing and booing meted out to the visiting team, all are causal factors in the very high percentage of home-team wins in basketball.

Crowd effect on officials. There are times when the crowd partisanship seems to affect the decisions of the officials, though such an opinion is perhaps just rationalization due to prejudice. Officials are much better trained than they were years ago. They usually receive all needed protection from biased fans, a situation that was somewhat different in the earlier days of the game. The practice of having some neutral commissioner appoint the officials for a whole geographical area has been of decided benefit in improving the officiating and in inaugurating fairer treatment of officials. The pay of officials is slowly increasing toward the level at which the arbiter can afford to spend adequate time and study in perfecting himself. We have come a long distance since the time the local official replied to the post-game protests of the visiting coach, "Youse is just sore cause we'uns beat yu."

Coach pep talks. Coach pep speeches before the game and between halves are given much less emphasis today than they were some years ago. In many communities, the coach's impassioned talk before the game and between halves is a revered tradition. The athletes expect "the treatment" and would be disappointed not to receive it. This speech seems to have become one of the superstitious routines which the boys believe in. They seem to be sure that such exhortation is doing them good. If the talk gives them confidence that they will do better, it is valuable when confidence is what they need.

Sometimes it seems that the coach can shock with vehement and vivid language an overly tense boy so that the youngster takes his attention off himself and his own fears and puts it on overt per-

formance. If the boys are doing very poorly because of too great excitation, the coach must try something. If he has already tried the calming technique without results, perhaps he can shock their attention back to performance. One coach says he obtains this type of action-direction of energy by making the boys more afraid of him than they are of the opponents. The word "afraid" is a little too strong to describe the phenomenon that seems to occur.

In the larger schools, boys reporting for the squad tend to have more experience in athletics. They probably take their athletics very seriously already or they would not be on the playing squad. Perhaps they have developed a complex of intense feelings that is part of the motivation underlying their game performance. Depth of feeling about sports and sensitivity to intense arousal, resulting from competitive athletic environment, may increase progressively with playing experience. A similar acquirement of emotional conditioning occurs in the development of depth of feeling for music, for example. Longer playing and longer performing produces greater skill and greater performance, and it also draws from the performer his utmost in feeling intensity. The whole of his being seems to be pouring his life energy into the physical expression. He is emotionally exhausted when he finishes his public presentation.

The coach handling boys at the more sophisticated sports level is less likely to resort to soul-stirring oratory before the game or between halves. He usually uses a quiet talk made up of specific suggestions, a last minute review of the techniques and strategy planned for the contest. The period between halves is spent in resting the boys and in making play suggestions to various individual team members. The suggestions are based on the athlete's first half play, or on the opponent's play. The boys are usually stirred up enough. They have extra reserves of energy. The coach specializes in presentation of a real analysis of facts with accompanying conclusions. This procedure is much more effective with boys who are already grimly determined to do their best, and who have had a modicum of seasoning. The old idea of general inspiration only, with "fight harder," "try harder" directions, is little used. Coaches

feel that great emotion-inspiring stimuli without specific directions may do more harm than good. The general stirring-up changes no errors in play but results in the commission of the same errors with greater force and energy, and thus with more drastic results.

The other "medicine-man" techniques of old-time coaches are disappearing along with the omission of the traditional pep talk. Former practices of writing insulting letters with a faked signature of a next opponent, sending false telegrams, or of inventing some emotional crisis which gives the game special significance, are becoming only yesterday's sport tales. The highly intelligent modern athlete has learned to analyze propaganda during his developing years. He is no longer so greatly deceived by it. Moreover, some third-string "sub" is likely to put on the coach's pre-game pep speech for the amusement of the "bench-warming" and un-inspired squad members.

PUBLICITY AND SPORTS ATTITUDES

The press, an important force in athletics. Most people read the newspapers and pay special attention to the sports sections. The coach is very well aware of what the press can do to his team's attitudes and consequent play. He finds it very unwise to ignore the sports writers or fight with them. They write the stories, present their side, and try to catch the attention of the public. They may even present what *they say* the coach said. Perhaps certain slight additions or variations are added to make a better story. The "direct quotations" of the coach printed in the sports story may even be entirely fictitious products of the imagination of the sports writer. Unethical as this practice may be, there is little the coach can do once such statements are published. It is a very foolish coach who refuses to be friendly with the press. The sports writers have been a great help in promoting athletics, arousing the enthusiasm of the boys, keeping the game in the minds of the people, and filling the stadia. For a few harmful and unfair stories, there have been thousands of complimentary and helpful articles. Many great American sports columnists are noted for their favorable attitudes toward athletics, athletes, and coaches.

Almost everyone likes to see his name in the papers. The boy who plugs along doing defensive work and assisting the scoring halfbacks all afternoon may not make the headlines but gets some satisfaction out of seeing his name in print in the line-up listed in the newspaper. It is his team, and his name is printed in the newspaper in recognition of his share in the achievement. The fond parent reads with great pleasure the name of his offspring in the team line-up. Papers often add to this pleasure by printing team or squad pictures.

Cooperation of the coach and the sports reporter. If the coach will work with the reporter, he may profit greatly by this additional means of developing desired attitudes. The coach will have the exact records of defensive and offensive achievements. Most sports reporters like to study these records in order to write a more accurate story. The young athletes are much more enthusiastic about these stories that describe the game precisely. The appearance in the paper of accurate analyses of individual contributions encourages the boys to continue their successful maneuvers and to correct their errors. One coach whose team was woefully weak on rebounding in basketball corrected this in two weeks. He furnished the local reporter with individual offensive-backboard and defensive-backboard rebounds recovered per game. The rebounds of the individual opponents were given also as a means of comparison. The sports report carried little comment, yet the printed record focused the players' attention on correction of a real weakness.

The sports reporters are just like the coach in that they are trying to do a good job and advance in their profession. Almost all will cooperate fully with the coach as long as he does not insist on their breaking good rules of sports writing. The coach generally finds that he can develop a friendly exchange of favors with the reporter. The coach helps the reporter with his story and the reporter helps the coach with his formation of attitudes. With such friendship developed, there is no danger of the papers revealing intimate details of game strategy in advance of the game. The local reporter wants the local team to win. In addition to his natural sports

enthusiasm about his own town, he finds victories make better stories and sell more papers.

In the smaller towns, many of the reporters are young fellows with little experience in real sports analysis. The coach can be of great help to these young men, and the help will be well repaid. The sports stories will have a great influence on the attitudes of the public and the athletes. If the boys tend to be a little too confident, a conference between the coach and the reporter produces a story that emphasizes strengths of the next opponent and weaknesses of the local team.

The "bear story," a pre-game release to the newspapers that lists injuries to key team members, sickness, or weakness in performance to date, is a common sports device. Some coaches make a regular practice of releasing these inferior evaluations and pessimistic predictions of their team's probable success. It is not always clear whether their purpose is (1) to make the other team overconfident, (2) to prevent the home team from becoming overconfident, or (3) to prepare an alibi in advance in case of defeat but extra credit in case of a win.

In the professional world of sports there is much less tendency for understatement of ability by the contestant. Professional athletes are more likely to state that they are superior and expect to win. The general public expects such statements. The gate receipts may be affected adversely if a contestant asserts any inferiority or doubt about his own ability.

Treatment of opponents. Sports stories in the newspapers may have a real effect on the other team's play. One canny college publicity man was accustomed to secure mats and complete records of the players on each opposing team. He would write up very flattering stories of the other team's individual players, their past good records, their achievements and success to date. These stories would be mailed to the newspapers of that local town a few days before the game as advance publicity for the game. The papers seemed to be glad to use such well written material praising local athletes. An advance "bear story" about that team's mediocre next opponent (the publicity man's own school team) would arrive in

the mail also. The purpose of the publicity man's strategy was to infuse the opponents with supreme confidence so that they would be less serious in their preparation and so that they would not approach the game in that stirred-up state so conducive to peaks of play. The strategy seemed to be successful in achieving its purpose; in fact, so successful that the coaches suffering its ill effects undertook to prevent a recurrence of such advance game publicity.

The coach should take the reporters of the student papers under his wing and guide them if possible. They may not seem important, but an insulting story written by one of them belittling a future opponent and lauding the home team is a godsend to that opponent. The coach of the "insulted" opponents posts the clipping of the story on the bulletin board in the locker room where his boys dress. The incentive to win and additional stimulus is furnished by the very opponent whom they are facing. One such story included the statement, "A team as weak as _____ doesn't even belong in the league." Many a coach has suffered a loss because of the ignorance of some undergraduate reporter who meant well.

In the games of national interest, like the football bowl games, newspapers have caused the coaches of the favored team much grief at times; for example, stories have been published bemoaning the unfit opponent chosen. The "unfit" opponents read the papers and prepare to be at peak performance in order to wipe out the insult and prove the newspapers wrong. The coach of the favorite team becomes the victim of lessened incentives to his boys and greatly increased incentives to the opponents. The coach understands what is happening but may be helpless to correct all the harm done in time to save the game. He is almost sure that the insulted opponents will play "over their heads" to win.

The coach must be very careful of his own statements about opponents. Chance remarks may be written up as boastful statements, or as derogatory remarks about an opponent. The reporters usually interview the coach after the game when the emotional tension may still be so great that the young coach will be incautious. Moreover, the reporters delight in securing a strong and startling

commitment of opinion from a coach. It makes a good sports story.

Even in the professional field, managers have made the error of insulting opponents. Ill feeling between two ball clubs has upset the regular winning and losing probabilities. Once in a while a manager has been so foolish as to say for print that a certain club was very weak, only to have that club "make him eat his words" by defeating him later. The power of strong feeling in affecting athletic performance is well known in the athletic world.

Radio and television. Radio and television are both powerful means of influencing the public in the field of sports propaganda and sports promotion. The points made with regard to the sports reporter are equally applicable to the sportscaster on the radio. Television is a little too new to analyze as yet. It brings in a great new audience. Perhaps the same principles that were stated about the public and crowds in general will be true to a greater degree after television brings sports into many homes. It is also possible that the view of the contest over television may be detached enough from the crowd hysteria to temper the emotion. A new audience of more objective sports fans may be arising.

Effect of defeat. A tragic defeat may be difficult to survive and still maintain high performance. Defeat is punishment to the athlete. If he was intensely aroused to "play his heart out" in the contest and battled his hardest through the entire contest only to lose, he is left with a psychic shock. How much of such punishment he can endure without having his performance deteriorate depends to some degree on his amount of previous success. If he has had few successes and many failures, this defeat may be the last push that drives him into less hopeful and less determined efforts. His nicety and precision of skilled performance deteriorate. On the other hand, if he has won rather frequently he will suffer less and expect to get back into the winning column soon.

The friendly newspaper reporter with a little guidance by the coach can do much good to the over-shocked boys by praising "their gallant efforts," noting and emphasizing their strong points, and prophesying great future progress and future success.

If a good team has lost because of less determined efforts, overconfidence, or careless play, a newspaper statement of what happened with a factual analysis of the errors and weaknesses is usually helpful. The story should carry little, if any, mention of strong points except as they are introduced to indicate what the team could really do if it were set and determined.

The coach, himself, should handle the team very carefully after a defeat. The boys feel badly enough if they are at all athletic in thinking or feeling. Praise or encouragement will be needed regardless of the score if the boys have done their best and have lost. If they were defeated through overconfidence, it may be better to say little. It would be a mistake to say anything consoling or complimentary. The next practice will be the best time to present the exact analysis and whatever criticism is necessary. By that time, the coach will be cool and more accurate in his statements. He will have had time to go over the game data-sheets and complete his analyses. The boys will have had time to do a lot of thinking about the loss.

Effect of overconfidence. Overconfidence in a team is listed by coaches as the most dangerous attitude. It means (1) less interest in preliminary preparation, (2) less preciseness of learning, and, what is more serious, (3) less available energy to save the game when they find themselves being defeated. There are no accurate scientific data on this last point, but coaches seem to be in agreement that the overconfident team, the team that is not conditioned for peak energy-output in specific ways, is unlikely to be able to rouse itself adequately after the game is under way. They play out the game and are often defeated by teams very evidently inferior in actual ability.

A spring practice against a team that will be played in the fall may set up such an overconfident attitude. If your team romps over the opponents with great ease in the spring practice, they are almost sure to look at the game, as it approaches the next fall, with very little concern or interest. The contrast of this attitude with that of the squad who received the bad licking in the spring

practice is apparent. Some coaches can recall to their sorrow a defeat illustrating just such contrast in attitudes.

The scapegoat. In the larger cities it is especially desirable for the coach to keep on good terms with the newspapers. The reporters have many interests and much news to write. The newspaper game is also highly competitive. If the reporters can make a good story out of the coach, it is less important to them whether or not it pleases the coach. When conditions are none too good in general in the city, and the favorite athletic teams are getting licked, the stage is set for the scapegoat technique. People who are frustrated, upset, and made unhappy by daily life and conditions, want to express their dissatisfaction some way. They look around for some one to use as the scapegoat. A coach who is losing some games makes a good target.

A reporter furnishes an outlet for disgruntled expression by publishing a critical story. His story gets a good hearing because the people want to complain about something and express their thwartings in some direction. The coach is an ideal goat because he is blamed for denying many of the people moments of vicarious victory feeling when his team lost the last game. The reporter writes his second story in more intense and critical vein and the tide of public opinion swings along. The ambitious reporter makes the coach an innocent victim of the people's resentment against their bosses, their taxes, their living conditions, and their general unhappiness.

Individual differences in emotional response. The best coach-procedure for inciting high emotional peaks in players is difficult to determine. Boys differ greatly in their sensitivity to emotional stimuli. What may arouse one boy to determined effort, may leave another unruffled in his complacent, ordinary output of energy. Enough stimulus to provoke great effort in the latter may produce overstimulus and erratic performance in the former. A player may be so nervous and excited that he loses his last meal, yet go immediately into the contest and perform extremely well. One eastern title holder in college gymnastics became sick the day of every meet, would remain dressed in street clothes and deter-

mined to sit in the stands. Under great pressure from teammates and coach, he was regularly brought down out of the stands, dressed in his gymnastic uniform and sent out to compete. He always did very well and generally won.

Vomiting from overexcitement just before a contest is not uncommon in athletics. Such sickness does not seem to affect the performance of the experienced individual after he gets into competition. Occasionally a boy in an individual sport such as wrestling will become faint and weak from overexcitement before a match. One college wrestler, observed before a match in the winter season of 1950, broke out into profuse perspiration while dressing for his first match. He complained of being cold while he was sweating. When the match began, he was overtense and awkward and did very poorly. Later in the same season, he experienced much of the same type of pre-match emotion, but he performed well as soon as he got into action. In these later matches he defeated men superior to the one who had thrown him during the emotional upset of his first college match.

The little forward, Milton Simon, who was captain of the Penn State basketball team of 1949, was frequently unable to keep food in his stomach the day of the game. If the game was one which greatly concerned him, he suffered the same upset condition the day preceding the game also. His record over four seasons of varsity competition showed that the more upset he was before the game, the better his performance in the game tended to be. Such worry is not unusual before special games. One basketball player came to the coach very much disturbed the morning of a conference championship game. He had lain awake most of the night worrying lest his team would not score a point; yet he played extremely well that night and his team won. At the time, this boy was already a veteran of three years of college play. In the same season he was mentioned for All-America honors.

The individual's pre-performance feeling about his own probable degree of successful performance is not highly related to his actual performance. Such pre-contest feeling by the player is almost useless for predicting his play. He may feel as if he were going

to have a great day, or feel as if he were not fit to compete. At times, with the less experienced athlete, the relationship between this feeling and later performance seems to indicate slightly negative correlation. Evidence of sickness must be carefully checked lest there be organic ill-health. Feeling of complete confidence must be watched lest it indicate overconfidence. The former (ill-health) implies that the athlete should not be used; the latter (overconfidence) also implies not using him if a suitable substitute can be found to replace him.

Temperament. Boys differ greatly in temperament. Some are lively, easy-going, and happy-go-lucky. They take everything in their stride without apparent worry or care. Others are choleric in temperament. They are quite intense in their emotional feelings, often irritable and easily angered. Now and then one encounters the melancholy player who tends to be depressed and always pessimistic, or the phlegmatic individual who almost drives the coach to distraction. The problem with this last type is to stir him up enough so that he will play up to his abilities. The happy-go-lucky player is often good for the morale of the squad if they are too worried or depressed. The choleric boy is frequently a great athlete if he can be taught to direct his resentment and rage into approved techniques of sport skills. He resents every yard the opponents gain or every basket they score. He makes a good defensive man, and frequently a good "power" man on the offense.

Morale. A feeling of team unity is a great asset to a team. This morale tends to develop among a group of athletes who have played together, and won and lost together. It grows in boys suffering, enduring, battling *together* for a considerable period of time. Too many losses may tend to lower morale. Friendliness, comradeship and gang spirit promote it. It is the antidote to cliques, fraternity divisions and petty jealousies in the squad.

The coach greatly desires this morale but can not improve it by lecturing. Morale is a product of feeling and emotion, not of reasoning. Worthwhile morale must be reflected in the good of the team and squad as a whole. It must not be blind obedience to good or bad leadership indiscriminately. Non-social morale

might include stirring up group unity in hate for an opponent, in united action to put the best player of the opponents out of the game, and the like. The coach can guide the growth of team unity and team idealism by example, by fairness, by devotion and loyalty to his boys, and by teaching them to respect and help each other.

Boys should be trained to talk to each other on the defense and offense during practice as a means of directing play and helping and encouraging each other. When they are in the contest, this habit of talking keeps their attention on the action, helps the feeling of team unity, and is a preventive of the non-adaptive behavior characteristic of high emotion.

Summary. Stimulating just a suitable degree of emotion in the athlete is a difficult process. The attempt may result in over-stimulus and erratic performance; or it may produce negative responses and interference with suitable motivation. Too great an emotional orgy of preparation may result in fatigue and inferior performance in the crucial contest.

A team can "get set" for peak performance by a process of conditioning. The conditioning includes focus on a specific opponent and practice on specific ways to defeat him. The process of "getting set" takes several days at a minimum. By such preparation, a "keyed-up" team may defeat a stronger but less concerned opponent. The process is exhausting and is usually followed by a "let-down."

Many outside forces may affect the amount of emotional excitation stirred up in the players. The arch-rival is usually adequate stimulus for peak effort without much additional stimulus. The feelings and emotions of athletes are not always predictable or subject to the guidance of the coach, but the great attainments of any age are resultants of great inspiration, laborious preparatory work, and final peak effort toward achievement.

Discussion Questions

1. Is man's behavior governed by his reasoning processes?
2. Does man possess extra reserves of power that he can not use without intense stimuli calling them forth?

3. What are the physiological adaptations for intensely stimulated action?
4. To what degree is fatigue postponed by intense motivation? What is the physiological explanation?
5. What are the basic human needs? How do they motivate athletic participation?
6. What is the probable origin of belligerency in the human personality?
7. To what degree does sex drive enter in the motivation of athletic participation? Does athletic ability add to popularity with the other sex?
8. Do athletics tend to be a type of compensatory activity in man?
9. What are the real causes underlying one community fighting another over a school athletic contest?
10. In this modern age of science and machines, why does man continue to possess great admiration for physical achievement?
11. Is war a stimulus to athletics?
12. What is the effect of physical size and development on personality?
13. How does the individual behave when he is overstimulated without possessing adequate, learned response?
14. What is the effect of overexcitement on learning?
15. What is the major reason underlying superstition in athletes?
16. What are the typical origins of superstitions?
17. What attitude should the coach take toward the superstitions that crop up among his athletes?
18. What techniques might the coach employ in preventing excess superstition?
19. Might a group of athletes be so impressed by the opponents' record that they play less well against them?
20. May emotion upset habits already established in athletics?
21. Does the introduction of voluntary guidance into the sports habit tend to improve the habit?
22. May intense excitation improve athletic performance? What is the nature of the "getting-set" process?
23. How long does it take to "get set" for a contest?
24. How many times in a sports season can the coach expect his players to attain these complete maximum peaks of output?

25. What conditions the boys for peak performance against the arch-rival?
26. What devices and techniques are used for sports propaganda?
27. Does fair play imply gentle play? Explain.
28. What are the values of student pep meetings? Is student cheering at the game helpful to the athletes?
29. Does the home crowd affect the officiating of a basketball game? A baseball game? A football game?
30. What is the purpose of a coach pep speech before the game? Between halves? Are such speeches usually desirable?
31. To what extent is the press responsible for the great popularity of sports? Does everyone like to see his name in the paper?
32. Should the coach and the sports reporter help each other?
33. What is the purpose of the "bear story"? Is it advisable to insult the opponents, before the game, by means of the press?
34. Is the coach responsible to a certain extent for the relationships of his team with the press?
35. Are undergraduate reporters of much concern to the college coach?
36. What changes may television make in public attitudes toward sports?
37. How should a team be treated by the coach after a defeat?
38. Why are coaches so afraid of overconfidence in a team?
39. Can you cite an example of the scapegoat technique being employed against a coach?
40. How much does pre-game nausea impair game performance? Can the player tell by his pre-contest feeling how well he will perform?
41. What type of temperament do you prefer in an athlete?
42. What is morale? Is it important to a squad? How does it develop?

Test Questions

1. Does strong stimulus actually make available to the athlete greater amounts of energy?
2. Is fatigue somewhat postponed, physiologically speaking, by intense motivation?
3. Is the adolescent's desire for social prestige one of the strong motives underlying athletic participation?
4. Is the belligerent youngster handicapped by his personality in trying

to become a good athlete (interpret belligerency to mean over-aggressiveness and pugnacity)?

5. In general, does athletic ability add to popularity with the other sex, at the high school level?

6. Is man's instinctive tendency to play, the drive back of athletic participation?

7. Have wars tended to be followed by a strong increase in athletic participation and popularity?

8. May over-excitement retard one's learning?

9. May intense excitement accelerate one's learning?

10. Are superstitions, in general, anxiety-escape attempts?

11. Should the coach encourage athletic superstitions?

12. Does the athlete's anticipation of the unsuccessful outcome of a contest affect his efficiency of play?

13. Are skills, once habituated, functionally independent of emotional states of the athlete?

14. In an accuracy habit, such as shooting a basketball for example, does the introduction of additional voluntary guidance of the movements, in order to be more careful, tend to improve the accuracy?

15. Does there seem to be some evidence of a physiological basis to the phenomenon of "getting set" for an athletic contest?

16. Can a coach safely plan to have his boys "set" for a peak performance each Saturday of the season?

17. In general, does the home crowd seem to have some effect on the officiating at school games?

18. Are pep meetings and pep speeches unsound psychologically as a means of helping a team to win?

19. As a general rule, should the coach be distrustful of sports reporters?

20. Is it advisable to insult the opponents before the game by means of the press?

21. Are undergraduate sports reporters worthy of special concern by the college coach?

22. Can over-confidence before a game be corrected between halves?

23. Is the best time and place to rebuke or criticize a team for over-confidence, the dressing room immediately after the defeat?

24. Is the human "scapegoat reaction" a special hazard of the athletic coach?

25. Is the player's pre-game feeling, about his probable success in performance, a rather good indication of his actual performance?

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- Time Magazine*. February 27, 1950. Page 54.

7

Handling Men

*My son these maxims make a rule,
 And lump them ay thegither;
 The rigid righteous is a fool,
 The rigid wise anither;
 The cleanest corn that e'er was dight
 May hae some pyles o' caff in;
 So ne'er a fellow creature slight
 For random fits of daffin.*

ROBERT BURNS

A man must have a personality and character to inspire respect and confidence if he expects to direct men effectively. To teach, one is expected to be a master of what he teaches. The young athlete looks up to the coach who knows his field well—so well that to work with him is to learn. But the young athlete also wants a teacher whom he can admire as a man. This admiration is allotted to an honest, courageous, impartial but human, firm and demanding, but kind and understanding, coach. The coach with a pleasant personality, a wholesome outlook on life, a youthfulness of spirit and interests, and a good measure of idealism, has great appeal to the adolescent boy.

The first principle of handling men in athletics is to know each one, personally and completely. The coach should know the player's self-estimate and his degree of adjustment to daily living. The athlete's relationships with his parents and teachers are related to his athletic efficiency. The type of community the player

lived in as a boy and the type he is living in now reflect on his behavior. How happy he is in his home and how much or how little he is subject to home regulation of his conduct are causal factors in his squad conduct.

The case study. One of the very few values that have evolved from subsidization of athletes is the necessity of making out a case history of the boy before investing money in him. His previous behavior as reported by teachers and coaches, by leading community members, and by fellow athletes, is considered. The type of home he has and how this home life is reflected in his personality must be taken into account. His parents are considered. One coach says he can usually tell after he sees the boy's "Old Man" what kind of an athlete the boy is going to be. The aspects this coach had in mind include both heredity and environmental training.

The assumption must not be drawn that boys from homes of higher socio-economic level are likely to be the better athletes. Boys from poorer homes may have learned much more about hard work and sacrifice of present momentary pleasures for some future goal. They may have had fewer successes, and thus are driven by a greater ambition to succeed. They are rarely spoiled by soft life, easy living, lack of responsibility or lack of experience in assuming some degree of self-dependence. Coming from hard-working people, they may even be bigger and stronger physical specimens, although the data on this point are not at all conclusive.

In certain sports like golf or tennis, the workingman's son is less likely to have had the opportunity to play. Unless by chance he has been a caddy or a court attendant, he is unlikely to have been able to afford necessary equipment to play. Frequently the facilities for such games are not available to the workingman's family. Golf and tennis seem to take years of practice for acquirement of adequate skill. If the facilities have been available to the poorer boy, the characteristics listed in the preceding paragraph would seem to give the poorer boy the advantage. Many exceptions make the use of generalizations of doubtful value. The case study of the individual boy always produces the best estimate.

This case history approach is becoming the practice of most

coaches. True, the coach does not call his procedures in getting acquainted with the boy by any such formal name, but he does find out all about his boys. The coach's "case studies" may be a little better than those of the educational guidance clinic because the coach attains a greater degree of personal and intimate knowledge of his "case." The coach is a friend of the individuals studied and is vitally interested in their proper adjustment. Moreover, the coach does more than diagnose and make recommendations. He conducts the daily therapeutic treatments in dressing room and practice-field contacts, and in assigned and supervised activities.

The teacher of athletics becomes acquainted with his students in the dressing room, the training room, school classes, sports practices, other extracurricular activities, the social life of the school, and through occasional visits to the boys' homes.

Friendship and guidance. The coach lets friendships form through his own informal daily contacts with his players. He does not seek out friendship. Friendship is given voluntarily, or not at all. The boy's worries and anxieties must be listened to with a sympathetic ear, never with ridicule. The problems may be laughed away by mutual agreement and understanding; but not dismissed by the coach as being too picayunish to be worthy of consideration. Talking out one's worries to a respected friend and advisor is quite often adequate catharsis.

The coach should be a real guidance director to his athletes. He must know them so well that they use him as a kind of father confessor, a person with whom to talk over their troubles. In many ways, the boys confide in the coach more than they do in their own parents. In other ways, they rely on the coach more than they do on their close friends of their own age. It may be that they have no close friends. The coach fills this gap also. He will find it necessary at times to serve as a foster parent, a friend, a wise counselor and protector, and a director of the boy's activities in striving for social prestige and self-respect.

Having so much influence on so many young men involves a great responsibility. The coach's life and character must justify this trust. It is no easy task to maintain such closeness of rela-

tionship year after year with young men, and guide them all toward self-improvement and worthy living. The delicacy of some of the problems increases the difficulty. The young athlete brings to the coach home troubles, parental relationship worries, difficulties with other teachers, and anxiety over girl associations. To give bad advice would be worse than to give none. At times all the coach dare do is to serve as a kindly and sympathetic listener.

Home worries affect an athlete's play. If the parents are having great financial difficulties, or are not congenial companions, the boy is likely to become emotionally upset. If the home is broken up, he feels the shame of it. He is not like the other youngsters with happy homes and fond, mutually agreeable parents. Some boys come from homes in which the parents are too dominating and too severe in their autocratic control of their children. Squad members from such homes may be so rebellious and aggressive that they are difficult to control, or they may be so timid and subdued that it is difficult to teach them to fend for themselves.

Group acceptance. Quarrels in the home, difficulties with a none-too-friendly teacher, or tiffs with a girl friend are common adolescent worries. The adolescent's social status is of continuous concern to him. If he comes from a poor home, a home lacking in culture, or a home unable to provide him with the tools of "the upper set" (adequate clothes, social manners, perhaps a car), he may be a social "outsider." He is not accepted in the social life and the social groups of the school.

The typical snobbery of the school social clique is felt by the boy. He is excluded if the social gang feels that he is not likely to add prestige to their group. With his present low social rating, they are afraid association with him will detract from their own social standing. They have their own inferiority feelings and their own problems of maintaining social prestige. They are very cautious about accepting newcomers unless these new additions give real promise of enhancing group *éclat*. If the "social outsider" is without good looks or special abilities, he is ignored.

In most schools, success in athletics will bring social group acceptance even if the athlete does not seek it. One of the problems

of coaching is the readjustment of the "social outsider" after he makes good in athletics and becomes a "Big Man on Campus." He has been hungry for social recognition and may spend so much time basking in this new social warmth that he neglects his sports. Having achieved a degree of recognition, the player may lose some of his drive toward further achievement in athletics.

RECORDS

Academic record. The public school is open to all normal young people. Moreover, those who are less well endowed intellectually are required to attend, as well as those who are more brilliant. The philosophy of public education is to educate each child up to his capacity. In the public high school, there will be many boys who are not academically bright. Curriculum adjustments will permit many of them to become eligible for high school interscholastic teams. The player's school record will tell the coach much about the type of personality with which he is dealing.

Extreme dullness will affect a boy's judgment of means by which he can get along in life and satisfy his wants. He finds that he can not gain prestige in his classes by brilliance or wit, and his social decorum does not bring him recognition until it departs so far from the normal as to demand attention. The attention he gets in this case is not pleasing unless his personality has become badly warped. The need for the social therapy of sports is apparent. Community houses, boys clubs, and recreation centers have made wonderful contributions to the proper social orientation of these less apt boys. Sports have been one of the best techniques of reorientation. The coach can do a great service through his training of these boys.

Many of the duller boys will devote more time to attempts at success in athletics. If sports are a field in which they can be successful, they become totally engrossed in these activities. For years they have been trying to find an area in which they could succeed. Athletics become compensation for failure in many other ways. Such boys find that sports success has a very high value in securing social prestige.

The coach should take these boys to whom academic subjects are difficult to master, help them to succeed, and keep them encouraged enough so that they pass the easier curricula of the public school. All will vote and all will be future citizens—plumbers, city officials, carpenters, iron workers—who will in many ways contribute more to society than some of their high school companions who shone in academic classes.

Democracy is not based on the idea of the world being ruled by an intellectual oligarchy. A public school attitude that favors to a great degree those academically apt individuals is a form of intellectual snobbery. Industry, devotion to duty, productiveness, morality, and common sense are not special traits chiefly characteristic of the high I.Q.

The coach can educate these boys who are destined never to be scholastic "giants" in any way. He can teach them emotional stability, social and health behavior, reasonably sound standards of moral conduct, industry; and a confidence in their own ability to take their place in the world, make a living, rear honest and God-fearing children, and work with their fellows. He can teach them a respect for human learning, for science, and for the factual basis in solving problems. He can teach them that life is teamwork, that in the game of life the academician may be necessary to make an occasional long run, or to kick a field goal, but that the worker is also necessary to clear the way, to do the heavy contact-work, and at times to make some sacrifices for the good of the group. The coach teaches them that society is a team, that each individual has his position to play, that each contribution is essential, and that each man can hold up his head and look with pride on the group accomplishment.

The academic record of the more scholarly boy is of interest to the coach for different reasons. This player's future plans may include college. His academic choices and grades may influence his future success. He must take his studies very seriously even if they are largely preparatory and seemingly little related to his present life. This academic boy may be more introverted, more sensitive, or more wrapped up in his own activities. He will have his

problems but they are likely to be of a different type. Sometimes he is an idealist and a little shocked by the rougher boys. His timidity may have kept him away from the direct and first-hand experience of the rough world of man and reality. Sometimes he is from a wealthy home and little habituated to regimens of hard work and discipline. He may be accustomed to eat what he wishes when he wishes, or to go to bed if and when he takes the notion. He may be an only child with a much too doting mother, or he may be a forlorn youngster from a broken home who has spent most of his life "farmed out" in private schools in lieu of a home. Once in a while a bright youngster turns out to be overly sophisticated and "badly spoiled."

Fine men develop from both levels of academic record. Many times close friendships develop between the academic extremes. The rough, dull boy trades his worldly wisdom for a little class help. He introduces the introverted, timid, bright boy into the "social gang" of the athletic squad because the timid youngster can hold his own in the skill performance. Perhaps the scholar "can kick well," "run like a deer," or catch passes on his fingertips. The veteran tutors him and helps him polish his skill. Athletic ability is the "open sesame" to group acceptance on an athletic squad. The exchanges of favors between the two types of boys are mutual. In exchange for a little protection during the shocks of initiation into the rough, hard world of athletics, the "scholar" helps his athletic pal to escape the cruel sarcasm of the classroom. Each youngster helps the other to understand, each profits, and each is better prepared to face the future. The coach fosters such friendships in his squad.

Health examination records. The health examination records were mentioned in Chapter II, "Squad and Team Selection." These records will give the coach information about sensory defects, medical history, and special weaknesses. A boy who is slightly hard of hearing may be unjustly rebuked for not paying attention. The coach will be able to do a better job of teaching this boy if he knows about the hearing difficulty and adjusts his teaching accordingly. A boy with bad eyes may play some sports much better if

he is equipped with glasses. He may need to be moved to a team position where great keenness of eyesight is less important. Some athletes wear contact lenses. Others wear lenses with regulation rims but with some form of protective mask. In non-contact sports such as baseball or tennis, glasses are often worn without extra masks but are usually fastened to the head more firmly than is necessary for ordinary classroom use.

Special adaptations in the teaching, in the form used, or in the position played, can be made for other types of weaknesses. Many boys make excellent athletes who have some lameness left over from infantile paralysis. Players with a club foot have made many a sports team. Individuals with two bad legs have made excellent gymnasts. A lame boy, if active, may make a goalie in lacrosse or soccer. One-armed boys play many sports. Soccer is one sport in which the absence of arms would seem to be less of a handicap. Many of these handicapped athletes make such good use of their two talents that they are superior to the players with the five talents.

Organic weakness will be recorded in the medical examination and will limit the type of activity in which the boy may engage. Even if the boy is permitted to play, the amount of work he should undergo may need to be greatly limited. Some of these boys with a great love for sports may partially satisfy their desires by coming out for manager.

Medical histories will often account for queer quirks in a boy's personality. If the boy was an invalid as a youngster, he may be less mature emotionally when he comes to the high school or college athletic squad. Mothers may have been so protective of the invalid boy that he remains, even after recovery, uncertain and timid about striking out for himself. Years of physical handicap are likely to leave a trace of dependence and lack of confidence that crops out under highly competitive conditions. On the other hand, the years of invalidism may have developed in the boy powerful drives to excel in the physical, drives that push him past youngsters less willing to work and to sacrifice in order to win.

Other records. Attendance records, behavior records, daily

sports practice records, equipment records and health examination records add information useful to the coach in guiding the young athlete's learning.

Irregularity of attendance at school may mean health problems, personality disturbance problems, or economic problems requiring the boy to do out-of-school work. Health is vital to sports participation. Personality problems that involve absence from school without reason may need careful attention. If the absence is for the purpose of avoiding school assignments, examinations, or teacher requirements, the absence only adds to the difficulty. The boy needs immediate guidance and help before the problem gets more serious. If the absence is due to the necessity of doing outside work, the coach may want to make some adjustment in the player's practice schedule. If the absence is due to boyhood pranks or mischief, a little guidance may prevent later trouble.

Absence from practice. Absence from practice is very serious in sports. Of course, health problems may demand rest from practice. The coach may direct the boy to skip practice once in a while if the boy needs extra rest after a hard series of games. At times school work may force absence from practice. Sickness in the home may require a player's absence. The coach wants to know why any boy is absent and wants to know in advance of the absence, if possible. Plans for a day's practice may need to be varied if one or two key players are absent.

Absence from practice just because the boy wants to attend a movie, go on a date, go fishing or hunting, or just loaf around for an evening, is a disciplinary problem. In a great hunting or fishing area, a day might be allotted for this outside recreation. The opening day of hunting or fishing season is a gala day in some sections of the country. The coach will need to evaluate the degree of interest in the outside activity and the effects of the day of absence from practice on the performance in the next athletic contest. If many boys are likely to be absent to hunt or fish anyway, the coach might as well allow them the one day. Such a small matter as a day's absence from practice is no reason for laying down a rule the enforcement of which may ruin the team.

With the exception of the above-mentioned situations, constant practice attendance should be a requirement for squad membership. There will be many a night when it would be more pleasant for the boy with the stiff or sore muscles to skip practice. The cold, rainy days make practice unpleasant also. Outdoor practice in the northern states may be very cold after the first of November. But practice is essential for the maintenance of fitness, the perfection of team-play, the preparation of the next game strategy, and the continual polish of skills. If the boy is not willing to submit to squad regimens of work, he does not belong on the squad. The coach is the one who should say when the boys need work, and when they need rest. If his judgment is not superior, he should not be the coach. The athlete should always feel free to talk over his condition with the coach, but he should also be willing to acquiesce to the coach's more mature judgment concerning amount and regularity of work. Without this understanding, absences from practice can become so frequent as to decrease seriously a team's chance of success.

Moral guidance. It is important that a coach know the player's conduct record for his preceding school years. The youngster who is trying to succeed in the world may hit upon the wrong method of satisfying his desires. This wrong choice of method for success is especially likely if the boy comes from a bad district or from an unhappy and broken home. The adult models he has had around him have been continually setting examples of the wrong type of adjustment. Boys from slum districts or bad communities will need extra assistance and direction in their behavior. Studies show that there is a high relation between delinquency and the neighborhood in which the youngsters are reared. A little advice and supervision from the coach can keep the boy out of bad gangs and away from "joints."

The value of athletics in preventing delinquency is well known among students in that field. Occasionally a delinquent boy is put on probation under the guidance of a public school. School men are accustomed to try to get such boys interested in athletics as a means of teaching them clean living and social and moral behavior,

of furnishing them with a source of success and social recognition, and of providing an outlet for their repressed energies.

The adult who has forgotten his own boyhood tends to become a little too harsh in his judgment of erring adolescents. So does the individual who has been carefully and strictly reared, and who has been protected from most of the world's temptations. The man who deals successfully with boys understands "most of the ills that the human flesh falls heir to." The only difference between many of the boys who get into their first serious scrape and the average adult of today is the difference in years and maturity, and perhaps the fact that the present adult did not get caught in his boyhood escapades. Most of us have, in our background, some incident of behavior that would have been labeled delinquent had it been known at the time of occurrence. We do not remember such incidents as serious misdemeanors now because we "got by" and are now conditioned to more mature behavior.

This "getting by" and "conditioning" is exactly what the present-day boy must be helped to do. Of course, he must not be encouraged in delinquency—just the opposite. But he must be helped over the mistakes he has made so that his future is not blighted.

One of the difficulties in teaching the boy who needs special guidance is society's attitude. Instead of considering the boy's misbehavior as wrong learning, many people tend to look upon it as "evil" inspired by the devil. They feel that punishment should be meted out to the youngster, not for teaching purposes but to revenge society. Some people still have fallacious notions about the value of punishment as a teaching method. Punishment that deprives the youngster of his desire to learn, or his opportunity to learn, is not educationally sound. The coach may have to protect some of his boys from the harsh criticism of other adults until the boys have had time to learn.

Most of the men who have been in the coaching profession for a number of years can recall situations in which they helped a boy "out of a jam." Examples of conduct that might get a boy expelled from high school or college are: stealing "eats" as a member

of a mischievous gang, playing practical but too serious jokes on school teachers or administrators, getting into "roughhouse" brawls, and once in a while getting into jail. A little equipment thievery is another common offense. Sex misbehavior or drunkenness are very serious offenses, but it is possible that even these should not always deprive the individual of the opportunity to finish his education and make a man of himself.

An objective study of each individual case should determine the proper treatment. Excess energy will express itself in everything from "horse-play" to antisocial behavior of a serious nature, if it is not planned for and directed. A few actual experiences in which coaches had to readjust the situation, or in which the culprits confided in the coach afterward, will be discussed.

One group of boys placed a target in the fireplace of their beautifully furnished dormitory lounge and had rifle shooting practice. A posted guard kept them from being caught. The coach heard about it and had it terminated before serious results occurred.

Another group had the freshmen collect milk bottles from the doorsteps about the town, then had a bowling game in the dormitory hall. They used the milk bottles for pins and the sixteen pound shot for a bowling ball. The disappearance of so many milk bottles started an investigation, so the game had to be terminated.

One suite full of boys was just saved in time by an alert coach. They had a large crock full of cider in their room to which they had added sugar and raisins. It was in prohibition days when adults were making home brew. The college boys were imitating adult custom. The janitor reported the unsavory mess but the coach beat the authorities to the room and removed the evidence. In the same dormitory, a pair of roommates had conceived the idea of going to bed with the ceiling light bulb still burning, then throwing shoes at it until it went out. In the morning a freshman was assigned the task of pilfering a new bulb for the next evening's "bedtime recreation."

One fine young athlete was acting as head waiter in the women's dormitory. The waiters had a pet dog which they fed from the

table scraps. One noon lunch, the boys served their tables, then scraped the remains of the baked beans on a large platter for their dog. Just then the head waiter came out with a request from the Dean's table for more beans. The other boys report that the head waiter apologized to the dog but shoved him away after allowing him a couple of extra bites. This fine young gentleman then scraped the rest of the beans on a clean plate and served them in his usual dignified manner to the Dean of Women.

The above incidents are among the milder types of deviltry that a coach encounters in his experiences with young athletes. Many other incidents could be told that are serious offenses against law and order. Social codes and standards are results of human experience the same as English, science, or mathematics. No child is born with any of these knowledges. He has to learn them. Why is he supposed to know society's complex social codes and morality requirements without adequate time to learn? If the adult models in his community are setting wrong examples, his social lessons may be much harder to learn than his academic subject lessons. He surely is given less organized and planned teaching in social adjustment learning.

The coach should consider social and moral codes as mature behavior that the boys are to learn, and will demand much instruction. The coach will use harshness only when a bit of it mixed with constructive guidance helps the youngsters learn more quickly. He will need to put unusual emphasis on these lessons for youngsters who are "dull" in social codes. This type of "dullness" is more frequently due to previous lack of proper environment for learning than to intellectual slowness. The non-adjusted individual will have to learn rapidly because this type of ignorance is heavily penalized by society. He must be given a chance to learn and much help if he comes from a community that has been giving him exactly the opposite kind of conditioning.

The school and the athletic squad must be permitted time in which to change and readjust the boy. The coach may find it necessary to intercede for his boys with the authorities. Sometimes he will have to absorb the shocks from other teachers who

care little for athletics, have no tolerance for a dull boy, feel no responsibility for arousing interest in their subject, or resent the boy's lack of respect and humility. The academic school teacher who thinks athletics are wasting the boys' time still exists. Coaches have tried to guide their players into courses under real teachers. There has been some justified criticism of a few coaches for guiding their boys into easy courses. To be equally fair, there should be some commendation for those coaches who have guided their boys into courses under *teachers*—teachers who are more interested in boys' progress than in establishing personal reputations for being erudite.

Loss of equipment. There is something about athletic equipment that has special appeal to a boy. It may be the memories attached, the comfort, or perhaps future enjoyable use that the player expects to obtain from it. At any rate, athletes usually want to keep their playing togs. Some schools give their seniors the warm-up jacket or some other memento. Athletes are notorious for collecting and carrying home with them equipment bought by the school.

One equipment man who had handled boys for many years tells the following incident. He was engaged in collecting equipment after the termination of a spring sports season. One college senior, famous in three sports, begged to be allowed to keep his uniform as a remembrance of the "old school." He made such a touching appeal that the stock room man finally said, "Bud, if you go to your room and bring me every bit of the school's equipment that you have taken and still have, I will give you your uniform."

The athlete thought this over a moment, then said sorrowfully, "Oh, gosh, Jack! I just couldn't do that. You would beat me on the deal," and he turned in his uniform without further protest.

Individual equipment cards are a valuable device in the handling of boys. Each player should sign a card listing each item of equipment issued to him. Equal care should be taken in checking off the equipment that is returned. Exact accounting prevents misunderstanding, decreases the temptation toward dishonesty, and gets the boys into good habits of care of equipment and personal

responsibility. The individual card system facilitates the return of enough equipment so that the best use can be made of the athletic budget. The boy who has signed a receipt for certain sports material is likely to be more careful lest it be lost or stolen, and more careful about returning it at the proper time.

It is almost impossible to run an athletic squad without some loss of equipment. A boy may find it necessary to leave part of his uniform on the sideline when he goes into scrimmage—a warm-up jacket, for example. Managers try to watch such articles but they also have many other duties. Boys should not be penalized for loss if the loss was not their fault. When the coach calls for a boy to participate in play, he does not want him to keep part of his attention on a piece of his outfit left on the sideline. The play demands the whole of attention. The individual equipment records will enable the coach to discover chronic offenders and investigate suspected instances of carelessness or dishonesty. It is the responsibility of the coach to arrange some method of caring for equipment not in use at the practice or game. If the boys are instructed to report any loss at once, the lost material may be recovered, or the cause of the loss corrected before further disappearance occurs.

First impression of coach. The first impression that the coach makes on his squad is important. There is nothing mysterious about what makes a good impression. When practice is first called, the coach must be ready. Being ready means organizing in advance all details related to equipment, procedures and the first day's activity. A few words of greeting and a general statement of objectives, practice plans, and necessary routines are advisable. Only such routines as save time and produce greater efficiency in practice are used; for example, weight chart recording, equipment exchange at the stock room, and issue and return of towels. Boys dislike routine unless it has a very evident advantage. The coach's opening talk should be quite brief. Boys do not go out for athletics in order to hear lectures.

The beginning coach must not let his timidity make him too harsh or blustery, in his attempt to cover up any lack of self-confidence. Neither should he appear unsure of himself. He might

very well begin with a few common sense statements of procedures and expectations stated in a calm, pleasant, matter-of-fact manner, and then start the boys off with planned action. He should keep the players very busy with worthwhile activities, and stop practice before it runs too long. A short practice crammed full of work for everybody creates a good first impression. These procedures will tend to indicate to the boys that the coach is a pleasant, quiet, forceful person who "knows his stuff."

Coach dress for practice. The coach should appear at sports practice in the uniform that he expects to use for teaching athletics. It is doubtful if a coach should ever appear on the athletic field or court in a business suit except on game days. Demonstration is a very important technique in his teaching and, being dressed, he is always ready to demonstrate. The attitude he tends to radiate is affected by his own evident preparation for practice. His own equipment should be good, clean and preferably not completely new and unused. This last point is not too important except that completely new equipment worn by a beginning coach may suggest a lack of experience. It is also in better taste to avoid use of letter sweaters or sports equipment flamboyantly labeled with the name of the undergraduate university. Any behavior that might be considered boastful or self-advertising is too likely to develop wrong attitudes in the squad.

Fitness of coach. Forcefulness and energy should characterize the coach's directions, demonstrations, and routine movements as he works with his squad. If the coach is tired, he must not show it either by less energetic behavior or by irritation and lack of enthusiasm. The young athletes are inclined to imitate the coach, absorb his attitudes, and feel his moods. The energy-demanding nature of the profession makes it necessary to exercise particular caution about preserving health and fitness. It takes lots of energy and dramatic ability to maintain a pleasant and agreeable teaching manner after a disappointing defeat and a sleepless night.

Bluffing unwise. The coach will find that he gets along better with his boys if he is honest about himself and his knowledge. He should admit his ignorance rather than attempt to bluff. Boys are

not easily deceived by pretense of knowledge. The coach can not expect to know everything about his sport. He can make it a point to fill in, as rapidly as possible, gaps in his sports knowledge.

Players' suggestions. Suggestions and contributions from the players should always be kindly received. Some of these ideas and suggestions will be foolish and worthless but the coach must not ridicule them. If he does, he will discourage his boys in bringing their ideas to him, increase the barrier between himself and the boys, and miss many valuable ideas. Suggestions indicate that the young athletes are thinking about the sport and are trying to improve the team. When the players do make real contributions to the team knowledge or strategy, they should receive credit for it. Athletes who are daily striving to improve, frequently originate movement-technique changes or form variations that are superior to old practices. Many a famous coach will admit that the bulk of his own knowledge is what his own boys have taught him bit by bit as the years went by.

Captains and responsibility. Theoretically the captain is the leader of the team. Actually he may be superseded by some more natural leader among the boys. Some captains do not qualify in playing ability after they have been elected captain. At times a political clique in the squad will install a boy as leader who is not a real leader. At other times two boys are elected co-captains. The co-captain occurrence may mean either that both were good men and deserved the honor or that the election is a compromise in the squad when neither division could swing the majority of the votes. The situation may occur in which the elected captain does not return to school. In this latter case, and in case the captain does not make the team, the practice is for the coach to appoint a captain. The appointment may include only a single game, with a different boy selected for the next game, or the same player may be appointed as acting captain for the season.

The captain should be the team leader only when he can be trained to be a real leader; otherwise, some other player should direct the club. The rearrangement for another leader is easy in football because the quarterback will run the offense anyway. A

defensive quarterback can be appointed to run the defense and call the different defensive formations. In basketball, the floor leader is the ball handler and the boy who sets up the plays whether he is the captain or not. The captain may be distinguished in that he is the one who consults with the officials, and not infrequently in this case he does so at the prompting of the floor leader. In the individual sports, the captaincy is more of an honorary position during play than a directing office. In every case a *good* captain is a player who assumes extra responsibility during game difficulties, and who sets the example for the other boys in training habits, attitudes, and work on the field.

Some squads have reported that they like two captains instead of one because the judgment of two is a little more likely to be sound. Besides, with the constant substituting in some games, two captains make it easier to keep one leader in the game. The offensive and defensive platoons in football might each have a captain, for example. The disadvantages of two captains lie in the possibility of rivalry without cooperation, serious differences of opinion, and passing of the blame for mistakes to the other.

Some years ago there was a movement in certain sections of the United States to let the captain be completely responsible for running the team during the game. The coaches under this system sat up in the stands and stayed away from the players during half-time intermissions. This procedure seems to work out satisfactorily when the boys are winning but as soon as they become less successful, they want some help. One great advocate of this idea that the boys run the team sat in the stands for a few seasons and his team did very well. He changed his mind at a basketball game one night when his boys were behind, 20-4, at half-time.

It would seem that the above coach was correct in each case. Boys probably should assume as much responsibility as they are capable of assuming successfully at their present stage of development, but should be guided by more mature judgment when they need and want guidance. A basic tenet of education is that the adults of society shall guide the immature. This guidance is continued until the younger members arrive at adequate maturity

to be self-guided. The immature would probably learn without guidance but not so rapidly. The experience of taking responsibility is desirable but the situations under which it is assumed must not be too difficult for the particular stage of learning.

Boys are taking over many of the responsibilities in athletics. They select the penalty when choice is offered, call for a substitute for themselves when they need rest, and take time out to talk things over and reorganize when all is not going well. Most of the coaches and older players interviewed have reported that only rarely should the captain be burdened with the duty of substitution. The opinion seems to be that the captain has enough responsibility in trying to keep the team going well, and in being a leader in actual play performance. Coach participation in team guidance is on the increase. The present trend in basketball is to have a conference between coach and players at each time-out.

Many coaches have tried using the captain to help select boys for the traveling squad. Any probable members of the starting team offer no selection problem in picking the traveling squad. Of course, all of the first team and first team substitutes will make the trip. It is the less able squad members at lower skill level who present a difficult choice problem. The captain can not afford time to study the lower levels of players on the squad and still take care of his other responsibilities. He might be forced to shirk his play and his first-team generalship if he were expected to evaluate accurately the less able boys. Captains tend to dislike the responsibility for this choosing because they feel that they have more important things to worry about. Besides they think the selection is the coach's job and that he should have had more time to study it. The coaches themselves seem to value captains' suggestions as additional and often valuable player ratings.

Idealism of young athletes. The coach must not forget the idealism of the adolescent. Even the "bad boy" expects and requires, by his rating scale for admiration, that the coach be of high moral standards. The boys who tell risqué stories among themselves or swear foully and profusely will be a little disturbed if their coach lowers himself to this same level. Some of the players with

better home training only put on the "wicked" act to impress their comrades. They are the very ones who are most profoundly shocked by such behavior in their coach. The coach is morally obligated to discourage profanity, risqué stories, vulgar sex remarks, and the like. Complete prevention of such behavior is impossible. The coach teaches correct behavior as best he can, and "fails to hear" every accidental lapse in the athlete's language.

Disguise of athletes' real feelings. One peculiarity of the player's behavior that the coach must realize is the tendency to camouflage real feelings. The boy who is a little afraid may do dare-devil stunts to prove to himself and others that he is not afraid. He may bully other boys and pick fights to prove that he is courageous. It is his inner fear that makes it so important to put on his show of bravery, anti-social as it may be. Stubbornness is a common resort of those individuals who fear to try the other procedure lest they show some weakness or experience some failure. Boastfulness is the common "cover-up" for inferiority feelings. The boaster or the "show-off" is trying to convince himself, as well as others, that he is better than he thinks he is. He may even fool his own consciousness but the underlying drive is inferiority feeling, not egotism. The coach must learn always to look underneath the symptoms that the adolescent displays, to determine the real cause. Emotions and attitudes are more likely to appear in disguised form than in exact expression.

Playing "dirty" or cheating are just the maladjusted athlete's way of trying to win when he finds he is being outplayed. A burst of anger and an attempt to start a fight may originate from this same effort to escape admission of failure—by this behavior the athlete is trying to divert attention from the lack of success. Of course, anger of a non-adjusted boy against an opponent occurs at times just because that opponent is preventing success. Emotional outbursts are a well-known device that young children use to get their own way. A trace of this temper-tantrum behavior may remain at adolescence and express itself on the athletic field.

Treatment of causes, not symptoms. The coach may observe the symptoms and may find it necessary to enforce some modifica-

tion of symptoms if they are too flagrantly annoying to the other boys. But the coach must determine the basic cause if he is going to re-educate the boy. The youngster really wants to be liked and respected by the other fellows. He is just wrong in his choice of methods of attaining such respect. Treating his behavior involves two approaches: (1) making clear to him that the techniques he is using are achieving the wrong results, and (2) helping him acquire better techniques.

Explanations and cited examples plus a little focus of his attention on group reaction will make clear to him his wrong approach. The player usually can see that the behavior indicated is unpleasant when it appears in someone else. He may be treated to comparison of his own actions with the undesirable behavior as he sees it in others. The similarity can be brought to his attention again when it occurs later in his own conduct. Other players are quite ready to cooperate in calling attention to his boasting, "grand-standing," and the like. The boy wants the group approval but has not learned how to obtain it. He tends to lapse back into his old habits of expression. The other players soon show him that he is using the wrong approach. This social group pressure is a little too harsh unless the coach has already given the boy guidance and encouragement in readjustment. The group "razzing" may discourage the boy so much that his athletic effectiveness is lowered or even so much that he drops off the squad, unless the coach gives help in readjustment.

Athletes' appreciation of wise disciplining. A second peculiarity of the adolescent boy's behavior is his felt need and desire for protection from his own impulses. This feeling is more likely to be present in the youngster who has had little training in self-discipline, or who has a tendency to let his impulses run away with his judgment. Youngsters who have grown up without much adult supervision or guidance may go to extremes just to obtain the aid of adult control in guiding their conduct.

This concept of appreciating "discipline" is little understood. "Discipline" in this sense is kindness, help, guidance, together with *firmness and regulation*. It may be the feeling of need for such

control that inspires great respect and admiration for the competent coach in spite of his rather stringent, autocratic, and spartan behavior requirements. The coach becomes an external conscience that guides the boys into what they know they should do in spite of temporary impulses to do otherwise.

Private treatment. Correction of a player for serious deviations from desired behavior should be done in private, if possible. The player can be prevented from making wrong beginnings by a quick, personal word of caution on the field or court. If the coach is in athletic dress and is among the boys, either to officiate or to direct, a private word is often possible without calling the boy aside. For guidance of actions of the player when he is away from the squad, or for more extensive direction about behavior while he is with the squad, a post-practice conference may be better.

Guidance is entirely different in its effect when given privately. The player may be thankful for help in avoiding errors. He tends to appreciate suggestions about better procedures if the specific advice is given privately and personally. When the same statements are made in front of the squad, he is conscious that the other players are hearing him criticized. The same statements are interpreted as being faultfinding and scolding. The player feels the need to "save face." He tends to hunt an alibi and to resent the coach "picking on him."

If the boy is rather successful and the pointed-out errors are common difficulties of most players, and if the coach's custom is to point these errors out when they are committed by any player at all, the criticism is taken for granted, is expected, and may even be appreciated. In this correction of various players in front of the squad, extreme harshness and sarcasm should be avoided. Coaches are of the opinion that very able players whose prestige is thoroughly established may profit by a little public belittling. In general, the less successful the player is, the more severely and adversely public criticism affects him.

Bad effects of individual smugness. Self-satisfaction is not conducive to great effort to improve. Boys may be spoiled in sports by over-rewarding, over-publicizing, and over-praising in much

the same way that children are spoiled by a foolish, doting, and over-indulgent parent. When boys begin to think they are indispensable, or that the world owes them a living and hard work is therefore unnecessary, they are in sad need of retraining. If possible, the coach should catch the early signs of such attitude-growth and institute re-educative measures.

Once in a while two or three such boys will upset a whole team-practice by their inefficient play. If such individuals need disciplining, it should be administered to them but not to the whole squad. Sometimes a coach will work an entire squad extra long or extra hard in an attempt to force greater effort from two or three loafers. It is a serious error to punish a whole group for the mistakes of a few. The boys who were not to blame are thrown into a rebellious mood that is bad for squad attitudes and harmony.

Squad reaction to injuries. Boys will get hurt at times during practice. Arrangements should be made in advance so that injured boys can be cared for without stopping practice for the day. It is much better for the coach to remain on the field or court to direct the practice while a trainer or physician cares for the injured boy. Squads must learn to see injury of team members without becoming upset. As soon as the injured player can be removed safely, he should be taken from the scene of the action and practice should be resumed. Athletes must not be taught to be self-pitying.

The quick resumption of play after the removal of some player because of a broken bone, a sprained ankle or knee, a dislocated finger, broken nose or whatnot, seems a little unfeeling and harsh to the uninitiated. Exactly the reverse is true. The injured boy will not profit by having a bunch of sympathizing or pitying friends about him. The trainer or physician can do better work without being bothered by the audience. The boy himself learns to take his misfortunes with calmness and to plan ahead. The squad learns to "carry on" and to face misfortune or pain with stoicism. Life demands just these traits in man.

The coach should continue the squad practice, if the injured boy is being adequately treated, for two reasons: (1) he owes it to the

players to teach them equanimity of mind in the face of misfortune, and (2) his duty as a teacher does not permit him to stop teaching because of chance accidents. He has a ball club to prepare for the next contest, the job for which he was hired. He should, of course, visit the boy after practice and as many other times as the seriousness of the injury justifies. He must be concerned about each individual boy even to the extent of leaving his squad entirely when there is no one else to look after the injured player. Previous planning for injury treatment should make this last recourse unnecessary.

Injuries may incapacitate the player for a while or even for the rest of the season, but permanent injuries in sports are extremely rare. Kindness, but not too much commiseration, is desirable in the coach's attitude toward the boy who has been injured. One famous football coach, much beloved by his men, said to a boy with a broken tibia and a sprained ankle, "You probably would have escaped injury if you hadn't been standing still watching the play." That was his only remark except to inquire of the physician if the boy were getting along satisfactorily. When the coach made a hero of the varsity man on crutches, the coach's remark stayed in his memory to keep his self-evaluation more accurate.

Training rules and health habits. Constructive suggestions concerning what to do instead of rules concerning what not to do are more effective with boys. The young athletes should understand by instruction and *example* the advantages of preserving good health for sports participation. The same behavior trait that detracts from one boy's play may not affect the play of another. However, there must be some rules. Other boys of the school are likely to follow the example of the athletes. Even the little fellows in the grades tend to emulate the athletes. It is important that the varsity man realize the power of his example. If the young man is going to play on a varsity team and travel with it, he has certain responsibilities. The school, the community and the coaches are judged by the behavior of the teams representing them.

If a team has gained fame, all the young sports fans watch it

very closely and imitate its players. The fact that they are public models for so many youngsters is a good argument to use in inducing players to guard their behavior. The players will acknowledge this reason for not having a bottle of beer or a cigarette even if they are convinced that such indulgence will not affect their play. Coaches should demand strict health habits and irreproachable conduct from their players in public. Athletes who fail to act in accordance with these standards are dropped from the squad. Whenever possible, the athlete should be induced to adopt equally austere habits for his own *private* conduct.

Firing boys. Making an example of a particular boy is a little rough on that individual, but it does wonders with the rest of the squad. If the coach is specific in his explanations, and keeps the dismissal out of the newspapers, the boy who is dropped may reform. Many coaches permit the dropped player to try out again, on behavior probation, the next season. These dropped boys usually learn their lesson and conform to necessary regulations the next season. There will be a few who will never ask to come back, who make no change in their behavior, and who bear the coach some ill-will. It is true that the coach has failed with these boys, but no coach is able to do a perfect job. It is sometimes necessary to drop one individual for the good of the group. No such final act should be taken, however, until a detailed, careful study of the boy has indicated the advisability of his dismissal from the squad. Firing a boy is too serious a step to be done on the spur of the moment without a thorough objective study of the problem.

When practice performance indicates poor physical condition, the individual case should be questioned and studied. Many times home work, late hours of study, emotional upset, or sickness have caused the drop in fitness. The evidence collected on the boy may indicate unnecessary dissipation of energies through bad health habits. In this last case, an immediate explanation of the situation should be made, and an immediate reformation demanded. If the player shows little improvement in habits following the understanding reached, he should be dropped from the squad.

The coach who finds it necessary to fire many boys for discipli-

nary reasons should take stock of himself and his teachings. Not counting the boys who are dropped because of lack of ability to qualify for the squad, one firing per year is high. Many coaches go years without finding it necessary to drop anyone for disciplinary reasons. On the other hand, the coach who lacks the courage to correct a bad situation on his squad, even if it costs him a regular team member or two, is deficient in one of the basic qualities of a great coach.

Each instance in which a boy is dropped from the squad should be preceded by a complete case study of the situation and a cool-headed analysis. Firing a boy on the spur of the moment and then taking him back later ruins a coach's disciplinary control. Firing a boy unjustly is equally harmful in that it is hurtful and unfair to the boy and does serious harm to squad morale. It is probable that a coach could avoid almost entirely the necessity of firing boys if he knew them well and could train them in their early beginnings in sports. He sometimes takes over a job in a school where bad habits and attitudes are already established and in which nothing but harsh measures produce changes. It is an old principle that if attitudes have to be changed quickly, shock is the best method.

One case will be cited as an example of the use of shock to change attitudes. A young instructor in a small college was persuaded to take over the coaching of the basketball team during the first week of February. The regular coach had just been fired after losing every game to date and the president of the college did not want to hire a coach for the remaining three weeks of the season. After the instructor took charge of the team, it had no better success but did win a final, easy game. The young instructor was kept as coach for the next season because of the greatly lessened cost of using a staff member, already employed, for the additional duty of basketball coaching. The president informed the young man that he was being kept as coach until a better plan could be worked out.

The young instructor started the basketball practice early the next season and found that all the lettermen of the previous year

had returned. He had studied the varsity players rather thoroughly during his three weeks of continuous defeat the preceding year. His conclusion was that they would not improve. Their health habits seemed to the instructor to be unsuitable for basketball and their attitudes were opposed to changes in style of play and to intense effort to improve. Moreover, their self-complacency seemed undisturbed by defeat.

The novice coach formed a second team made up only of boys who seemed to have fine health habits, great interest in the game, and an intense desire to win. The coach kept this group of "seconds" together and worked very hard with them. It was after Christmas vacation before these "seconds" defeated the old lettermen in a scrimmage. After that scrimmage, the first success by the "seconds," the coach dropped the old lettermen from the squad. The alumni and student furor over the action was terrible; but the "seconds" began the post-Christmas season with a win, the first of the season. They won seven straight games and went on to have a very successful season. By the time the fourth or fifth game was in the books, the alumni and students were saying that the coach's action in firing the old lettermen was just what they had thought should be done. From that group of "seconds" who took over, a tradition of health behavior, training, and seriousness about the game developed that lasted in that college many years.

There is no way to tell whether the young man's action in the case was correct. It was probably not the best for some of the boys who were dropped. Had the "seconds" lost most of their games, the school attitudes might have remained unchanged. Certainly the coach would have been fired as coach; but from the president's original statement it might be concluded that the young instructor was being used only as a temporary expedient anyway. The point is that the young man had studied the entire situation for ten months before he felt that the accumulated data indicated such action.

Coach or detective? Some coaches make a practice of telephoning the houses of their players to see if their boys are home in time for a good night's sleep. It is possible that this practice may

encourage some boys to be more regular in their habits. Those parents who have taken pains to train their own children well are annoyed by such tactics. Good boys who are already home in bed may be wakened by the coach's telephoning. It would seem that an understanding could be reached with parents that would make unnecessary this telephoning procedure. The coach can not expect to usurp all the home-life discipline.

The coach can drop around to the various "hang-outs" of the boys to see if they are out too late. If the coach has developed enthusiastic athletic attitudes in the community, he is generally kept informed by interested adults about any deviating behavior on the part of his boys. He can not use these reports as evidence to discipline a boy, but they do help in knowing which players to watch a little more carefully. Again the point is made that the coach can not expect perfection. Boys may be rather conscientious but have a sudden lapse on impulse. Sometimes it is better to seem to *fail to see* what one actually does see. Almost being caught in disapproved acts will be enough stimulus to change the actions of many players.

There will be boys who are good athletes but need constant supervision. Boys who have a tendency to get overweight seem to be constantly hungry and subject to impulses to eat at all times. Other boys can not seem to think of anything but girls. They are always trying to make "dates" on trips or around the town. There is also the boy who must sneak out late at night to see the city. The answer in these cases is constant supervision on the road, and much guidance at home.

Girl problems. There is the boy who has grown up with normal play and association with the other sex. He has an occasional date, or perhaps has a regular girl. His associations do not interfere with his sports and may even be helpful if the girl is interested in athletics. There is also the boy who has never had normal friendly association with the other sex until long after the usual age. When this type of athlete becomes infatuated with a girl, he probably will be useless as an athlete for that year. He can do nothing but dream about her. He is the result of improper

developmental experience in association with and evaluation of the other sex. If the public school programs had more coeducational activities in their physical education programs, such maladjustments would be rare.

The high school coaches who insist that their players have no "dates" are setting the groundwork for a final maladjustment. The adjustment to the other sex should be a gradual, developmental, and educational experience. The difficulty with the "girl problem" in athletics lies in the possible loss of sleep, use of time needed for study, distraction of interest from the sport, and the like. These are simple problems that the conscientious youngsters of both sexes are willing to adjust if the coach talks to them. The girl usually wants her boy to be a success in athletics. The young people generally can agree about what amount of dating will permit adequate study and adequate sleep. The key to the interest factor lies in keeping the girl interested in athletics also.

If the player's girl has bad habits and cares little for the boy's health or athletic success, she can be very harmful to his playing career. A selfish little beauty who cares only for her own pleasure can cost the team a much needed athlete. It is usually some naive youngster who knows little about girls that falls into her net. One naive athlete, a college letterman for two years, dropped the sport in his senior year because of such a girl. She told him he would have to quit sports and devote more time to her or she would get a different boy-friend. The athlete lost a year of college sports experience but was lucky in regard to the girl. She threw him over anyway before that year was ended.

Good influence of girls. Girls are often a good influence on athletes. A player who has little personal sense of responsibility or mastery of his own impulses may be greatly helped by some good girl who is interested in his welfare. If he is fond of the girl, he tends to do as she wishes. Many such girls have been helpful to a coach in getting the athlete to preserve good physical condition and to be conscientious in his work. It is true that there has been much criticism of the female sex for their distraction of the player's interest from the sport. The coach seems to find about as many

instances in which the girl is the moral force that motivates a none-too-good boy to make himself into a real athlete. Many a coach has greatly appreciated such help even when he doubted the girl's soundness of judgment in choosing such a prospective husband.

Individual adjustment to a squad. The athlete has to know how to get along with the gang. The coach will have players who do not understand adolescent group rules. Such codes of youth condemn a boy for everything from running to the coach with tales, acting like a "cry-baby" over a minor injury, bullying a conscientious but less skillful player, or "blowing his own horn" too loudly, to merely refusing to share his birthday cake from home.

It is very serious for a player to be unable to get along socially with the other players. His teammates will not work as well with him if they do not like him. Sometimes the coach has to take the other team members into his confidence in trying to readjust such a boy. The other players usually are willing to try to help the coach and to cooperate with the unpopular player, if the coach can persuade them that the "outcast" will help them win. If the squad boys undertake to remodel a youngster's behavior, they will do it or eliminate him in the attempt. If the antisocial player is really an athlete and helps them win, they probably will begin to like him and to tolerate some of his eccentricities. Real friendship of other boys is often the best medicine for the maladjusted youngster.

"Senioritis." There is an old statement in athletics that a coach does not want too many seniors on his team. Seniors are at times the best players, the most experienced players, and the backbone of a winning team. On the other hand, the senior athlete may have been a regular during his sophomore and junior years, and may have been induced to participate in too great a variety of outside activities as a senior. He may have played on great and famous teams during his other years of varsity only to find himself on a mediocre team in his senior year. He finds it a little difficult to rearouse his old "fire" when the team record looks unpromising. Seniors are almost through with their college careers

and naturally are thinking somewhat about their future plans. Their focus of interest and attention tends to be changing. They are often squad problems because of indifferent attitudes. There are two possible solutions. One is to spend more time and care on keeping up the interest. The other is to train substitutes to fill the seniors' positions.

Irritability. A tired squad, an overworked squad, or a defeated squad may become irritable. Cold, mean weather, home troubles, classroom worries, girl difficulties, or temporary slumps in skill may upset a boy. Loss of sleep is a frequent cause of irritability chiefly because of the fatigue involved. Boys who are trying to take off a few pounds quickly in order to make the required weight in wrestling often become easily exasperated and very impatient with their associates. Boys in the dressing room, "keyed up" for a game, may "fly off the handle" over a minor detail that would not ordinarily upset them. Managers need to be very careful in their associations with these boys just before a game and between halves lest violent outbursts occur over some trifle. The coach should recognize the impatient behavior as a symptom and analyze it for the underlying reason. Rebuke for temper displays may be exactly the wrong treatment.

Value of the squad "wit." A squad clown may be very helpful when the work begins to become tiresome. Track is an example of a sport in which the fun-loving jokesters are a great asset. These wits must understand, however, that their clowning must not interfere in any way with the actual practice as it is occurring. Most of them do understand. Most squads have their jester. He puts on the coach's pre-game talks for the entertainment of the scrubs. He is usually a mimic and a light-hearted rogue. Coaches seldom know about him. Old-time coaches pretend not to know about him even if they do accidentally hear him. He seems to be a good influence in that he lightens the tension when it gets too great. He makes the practices more enjoyable for his fellow squad members. The coach who is competent is therefore respected and will have no fear of being undermined by the "jesting belittler." If

it were possible without spoiling his act, the coach would encourage him.

Summary. The key to handling athletes lies in the adoption of an impersonal, analytical attitude. The means of handling the athlete then tends to be what careful planning indicates will succeed. *The coach must meet situations when they arise and he must make the decisions.* Athletes will respect discipline if they respect the one who enforces it. Without discipline, training tends to be lax both on the field and off. Discipline means such management as will speed up the learning of the athlete and increase the chances of winning. It means kind, sympathetic treatment when analysis indicates that such treatment is best for the boy and squad. It means firmness and rebuke when such treatment seems most likely to improve the athlete. A season's discipline can be broken up by one foolish relaxation of the person in charge. Discipline must be *all ways and always.*

Discussion Questions

1. What traits of character and personality distinguish the able director of men?
2. What can the coach learn about a boy from a visit with his parents?
3. Do poor boys tend to make better athletes?
4. In what part of the "case treatment" is the coach superior to the educational guidance clinic?
5. Why do the adolescents tell their troubles to the coach?
6. Should the coach always give them advice?
7. What characteristics in a boy gain him social standing among high school youngsters?
8. What characteristics in the player gain him gang acceptance on the squad?
9. Why does the academically dull boy have special need for sports?
10. What percentage of the world's population is scarcely able or not at all able to pass the harder academic subjects of senior high school?
11. Has the academically bright boy less need for athletics than the academically dull boy?
12. In what way are the problems of the academically bright youngster

different from those of the academically dull youngster in his attempts at adjustment to the athletic squad?

13. Is it better for boys to associate chiefly with those of their own intellectual level?

14. What should the coach do about unexcused absences from squad practices?

15. Why is constant attendance at practice so important?

16. What is the place of athletics in the readjustment of delinquents?

17. What is delinquency?

18. Account for the extreme severity of attitude of many adults toward misbehavior of adolescent boys. What causes misbehavior?

19. Should the coach ever protect his boys from the consequences when they break laws?

20. Is it justifiable for the coach to conceal evidence that would get a player expelled from school if known?

21. What causes the wide divergence in understanding between the average faculty member and the average athlete?

22. Does one tend to be "bad" or "good" by inheritance?

23. Why does the average academic teacher often have little consideration for the academically dull individual?

24. Why are boys so prone to take, as their own, school athletic equipment?

25. What is the major advantage of the individual equipment card?

26. Should boys be held responsible for the return of all equipment issued to them?

27. Is there a place in sports for the crippled or lame boy? For the boy with bad eyes or with hearing difficulty?

28. How does the coach plan for making a good "first impression" on a new squad?

29. Why is it so important that the coach dress in athletic togs for each practice?

30. Why is physical fitness so important in the coach?

31. Should the coach bluff his boys when he does not know the answer?

32. Are player suggestions to the coach highly desirable?

33. How much responsibility should the captain assume in handling the team?

34. Should the captain do the substituting and the selecting of "sec-

onds" who make trips? Do the captains usually want to help with substitution and selection of boys for trips?

35. What is the meaning of the statement that symptoms may disguise causes of a boy's behavior?

36. Explain the viewpoint that athletes want discipline.

37. Why is private treatment usually better than public treatment in case of serious misbehavior on the squad?

38. What should the procedure be, following the injury of a player in practice? Why is the resumption of practice so important?

39. Why may it be necessary for athletes to set higher standards of health habits than the demands of the game require?

40. On what bases is it justifiable to fire a boy from the squad? What are the preliminary steps? Is it necessary to fire boys frequently?

41. Should the coach be a detective? Should he avoid seeing some misbehavior?

42. Should the coach forbid dating by his players during athletic season?

43. May the girl be a good influence? A bad influence? Explain.

44. List some adolescent codes that make a boy unpopular on the squad.

45. Why do coaches tend to anticipate "headaches" with a team composed entirely of seniors?

46. Irritability may be a symptom of what factors?

47. What is the value of the squad clown?

Test Questions

1. Does a larger relative number of the successful athletes come from families of lower income brackets? ("Relative" refers to per cent of those in each bracket—question would be true, for example, if there were three times as many poor boys but five times as many of them in sports.)

2. Does the coach rely chiefly on the "case method" in handling athletes?

3. Should the coach always give his athletes advice when they tell him their troubles?

4. Are academically dull boys unlikely to be able to achieve success in athletic skills?

5. Is the academically bright boy less likely to profit by sports participation, in terms of personality adjustment?

6. Is it preferable in sports to group boys according to their academic intelligence?

7. Has athletics been found to be useful in readjustment of delinquents?
8. Should the coach ever protect his boys from the drastic consequences when they break the laws?
9. Is it ever justifiable for the coach to conceal evidence of the misbehaviour of his athletes from the rest of the faculty?
10. Is the misbehavior of a boy a result of his environmental experience?
11. Should boys be held responsible for the return of equipment issued to them?
12. Is there sometimes a place in sports for a crippled or lame boy?
13. Do bad eyes or deafness bar a boy from sports participation?
14. Is it usually better for the coach to "dress" for practice?
15. Is it undesirable for the coach to admit to his boys his ignorance of the answer to a specific sports problem that confronts them?
16. Is it highly desirable that the players feel free to make suggestions to the coach?
17. Should the captain do the substituting during the game?
18. Should the captain have an equal share in the selection of the substitutes who will make the trips?
19. Do the captains usually want to help with substitution and selection of boys for trips or for team membership?
20. Do athletes tend to want squad discipline?
21. As a general rule, is it better to rebuke an erring boy in front of his teammates?
22. Should practice be discontinued for the day after serious injury to a squad member?
23. Is it necessary for the coach to fire boys from the squad rather frequently during the season?
24. Is aggressive behavior usually indicative of egotistical character?
25. Is it occasionally wise for the coach to "avoid seeing" some misbehavior?
26. Should the coach forbid dating by his players during the athletic season?
27. May a steady girl be a good influence on the sports performance of an athlete?
28. May a girl be a bad influence on the sports performance of an athlete?
29. Is the squad clown usually a detriment to squad efficiency?

30. Is it reasonable to expect seniors to have as intense an interest in sports as do lower classmen?

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8

Speed and Accuracy

SPEED

It's not how fast it travels but how soon it gets there that counts.

Speed is a word used to indicate various types of quickness or rapidity. In sports it may refer to quickness in seeing, quickness in acting, or both. Usually speed refers to a combination of perception by the sense organs with action of a group of muscles. But speed is specific to the type of act. A champion rope climber is not necessarily a fast runner. A catcher who has great speed in pegging to second base may be a slow base-runner. A soccer forward who is very quick with his feet in passing a soccer ball may be relatively slow with his hands in passing a basketball. A dash man in track may be slow in changing direction in handball. One does not have "speed" but "speeds." Various types of speeds will be discussed in the first section of this chapter.

Speed of perception. During the war the naval flyers were given training in quick recognition of airplanes. The time it took individuals to recognize a plane was reduced to one-tenth or less of its length at the beginning. It is evident how important this extra speed of recognition would be in spotting an enemy plane.¹ The

¹ The training procedure was called by the Army and Navy, "The Renshaw Recognition System" after its originator, Dr. Samuel Renshaw of Ohio State University. *The Saturday Evening Post* for April 17, 1948, page 20 ff., carries a popular descriptive article about Dr. Renshaw's work.

army used a somewhat similar system of training although with a shortened practice period hence perhaps less improvement. It is apparent that great decrease in time necessary for visual recognition can be produced through training. This fact has great importance in its bearing on sports.

The learning of great speed in visual recognition is a basic beginning for hitting a baseball curve, returning a twisting service in tennis, or catching batted balls curved by the wind or curved by extra spin on the ball. Almost all team games are full of situations in which "flash" perception is necessary for adequate response. The word, "flash," is not entirely a misnomer. The naval flyers mentioned above were able to make recognitions in a hundredth or even a two-hundredth of a second of exposure. Some such speed of seeing would seem to be essential for hitting the "quick-breaking" curve of a fast-ball pitcher. Some of the volleys across the net of champions in tennis or badminton indicate a similar speed of perception. The perception of the professional goalie in hockey must possess this great speed.²

Training of perception. Techniques for training the perceptual processes have not been worked out to any great extent in sports.³ A few batters have found that it helps them to learn to see more quickly if they stand by the plate while the pitchers are working. The batters get practice in seeing the curves and the ball path. An occasional tennis coach will place his student in a receiving position but have him practice for a few minutes each day doing nothing except looking at the fast-twisting services until he learns to "see" faster. This "looking" seems to be helpful to the younger squad men and can be done while the first-team members are practicing their service. Goalies in lacrosse, hockey, and soccer have long been

²It is not at all clear how much of this recognition of extremely short exposures on a tachistoscope comes from some form of after-image. The faster motor-response to cue indicates that, for the range of decrease from one-tenth down to the lower hundredths, the recognition is not just a result of a continued examination of an image left in the mind.

³Hoyt L. Sherman reported an experimental study of the speeding up of visual perception (including work with forward passers) at the 1949 meeting of the C.P.E.A. His report is given in the *Fifty-third Annual Proceedings*, 1950, of the College Physical Education Association, pages 8-16.

accustomed to tend goal in the preliminary warm-up while teammates, in rapid succession, bombard them.

The goalie practice is the type needed. It includes short, concentrated, daily practices in seeing quickly. In baseball, the batter usually gets too little drill because of the small total number of "looks" in his few turns at batting practice. With so little practice in looking at a pitched ball, it takes him too many years to acquire adequate speed of perception.

Learning fast perception. The principle to be noted for sports is that the beginner does not have much speed of perception but that, with proper training, he can acquire this type of speed. High levels of perceptual speed are products of learning, not of inheritance. Almost any boy can acquire great speed of perception through practice in speeding up his perception. A boy who is a little slow in reaction time, or in speed of running, may compensate for this slowness. He may learn to recognize the situation so quickly that he has more time to field the ball, intercept the pass, return the serve, or deflect the puck.

Fewer choices, faster action. The speed of perception is somewhat affected by the distribution of the observer's attention. When the cue to be recognized is likely to be one of several, each of which requires a different response, the time is lengthened. A defensive man in sports may have to hesitate until the cue to act becomes clear. In baseball, if the fielder catching the ball is forced to decide whether to throw home or to second base, he is a little slower than he is when he is taught to throw to home plate only. The infielders make the further decision of whether or not to intercept the throw before it reaches home plate. The player who cuts off the throw has only the act to do. His choices are reduced to a minimum. He places himself in line with the plate. If the ball veers widely, he intercepts it. If the catcher yells, "Cut it off," he catches it. Without either one of these two stimuli, he lets the ball go. In sports, responsibility is divided so that the number of choices left to the player acting is reduced to a minimum.

Choice reactions take longer than simple reactions. If there is only one base to which it is proper to throw the fielded ball, the

action is faster. The more possible choices, the slower in getting under way the action tends to be. If the choices are too complex, the player is confused and remains undecided, doing nothing. He holds the fielded ball, for example, until too late to prevent the opponent from advancing another base.

Athletes in team games are continually trying to force the opponent into the slower, choice-reaction situation; for example, a defensive man in basketball tries to place himself at the exact distance that leaves the opponent in doubt as to whether it is better to try to shoot or dribble by. If the defensive player placed himself a foot nearer, this would permit the offensive man to make the *simple*, and faster, habit response of dribbling. If the defensive player is a foot farther away the offensive man can make the *simple*, habit response of shooting. The mid-distance forces him to make the slightly slower choice-reaction. If the offensive man is, by habit, most inclined to dribble, the defensive man plays just a little farther away, and vice versa.

Strategy of distracting attention. One of the tricks in athletics is to try to distract the opponent's attention so that it takes him a little longer to catch the real cue to one's action. The basketball forward puts on an act by slouching indolently in what seems to be a completely inactive position, looks up at the crowd, and makes a casual remark to his opponent. The purpose is to get the opponent to relax his attention and his preparatory muscular tonus, and then to dart by him for an easy pass reception near the basket. Spinners, double and triple passes, and a man in motion in the reverse direction from the play in football are attempts to distract the opponents' attention. Razzing a pitcher is an attempt to divide his attention and make him less effective. Fakes and feints are athletic devices to direct the opponents' attention and preliminary action in the wrong direction if possible, and to make a little hesitation by the opponent necessary before he can be sure of his cue to act. Of course, an additional advantage is gained if the opponent can be induced to make a preliminary motion in an inappropriate direction.

There are many devices in sports aimed at dividing the attention

of the opponents and forcing them to make choice (hence slower) reactions. Baseball has the "squeeze play" and the "double steal." Football builds its offensive plays so that running plays carry the continual threat of a pass play. The secondary defense is forced to come up more slowly. The pass plays reverse the process and start out like a run so that the secondary backs on defense hesitate about dropping back. The ambidexterity of the modern athlete has forced the opponent to spread his attention over more possibilities, hence has slowed his counter-moves a little. The offensive opponent who can throw or kick only from one side permits the defensive opponent the faster action of the one-side focus of attention.

Attention focus, faster action. Perception is a little faster when the attention is focused directly on the situation. This principle is so well recognized in sports that rules or courtesy customs prepare the defensive man. The "Get set!" in track and the "Ready?" in tennis or handball are examples of permitting best focus of attention. The quick play without any signal-calling in football, and the sudden delivery and fast throw past an inattentive batter are examples of offensive strategy that take advantage of slowness of attention-focus. The hidden ball play is another baseball stratagem.

Attention habits. Habits of attending properly in order to distinguish cues more quickly may be established. A habit of diffusing the attention over a wider area helps the offensive passer to see openings more quickly. Screens in basketball occurring on the far side of the court from the ball are less successful if the defense has learned to keep its higher level of attention on the offensive opponent instead of keeping it on the ball. Young officials are given special training in focusing the major amount of their attention on their area of the court regardless of the movements of the ball. The novice official tends to fail to see rule infringements if the excitement is great and the action is fast. He has trouble focusing on the successive acts of so many players. His disturbed and distributed attention makes him hesitant. He realizes rule infringe-

ment, if at all, so late that ensuing action makes whistle-blowing seem indecisive and better omitted. If the action is fast enough and furious enough, and the crowd is also breaking in on his attention to cause further distribution or variation, many infringements of rules may be overlooked unintentionally. The lower level of his widely stimulated attention does not permit some incidents to force themselves into his awareness before rapidly succeeding stimuli have blocked them out entirely.

Focus on movement, greater speed. Two other aspects of attention-focus vary the speed of response. If the act to be performed is to be initiated as soon as a single stimulus occurs, the performer can focus his attention on the movement and hear the stimulus incidentally. Experiments have shown that the track sprinter or the football lineman can start sooner if he focuses his attention on the initial spring and hears the gun or signal incidentally. If he focuses his attention on hearing the signal, he is a little slower. If the athlete can anticipate the signal, he can start sooner. Moreover, he may be able to time the rhythm of the signal, or the starter's pattern, so that he can *start with* the signal, not *react to* the signal. The difference in time of these two types of starts is great enough to represent feet in distance instead of inches. In football, the offensive lineman has the advantage of being forewarned of the starting signal, but the track man may guess the starter's rhythm wrong and be penalized or disqualified.

Advantage of auditory over visual cues. Experiments indicate that if the cue to act can be made auditory instead of visual, the athlete's response is more rapid.⁴ The gun in track produces a faster start than would a dropped-flag signal. In football, the called-number signal produces a faster get-away than is possible by using the movement of the ball as a signal. The defensive basketball guard responds more quickly in changing men (switching) if he hears his teammate yell "switch" as the screen occurs. Quite

⁴If the sound travels any appreciable distance before reaching the ear, it produces a slower response because of the relatively slow rate of the sound traveling as compared to light.

often his defensive teammate gives him a push with the hand to reinforce the signal. The push may begin the switching movements sooner than the voluntary movements could occur.

The principles of perceptual speed and quick response are listed below.

1. Practice can greatly reduce time of recognition of cue to act.
2. Habits of suitable attention-focus can be learned.
3. Perceptual speed is developed by specific and frequent practice in an attempt to recognize cues more quickly.
4. In many sports, perceptual speed may be developed to such an extent as to compensate for slower reaction time.
5. Team skills should be taught so that one's own team will have as few choice-reactions to make as possible, and so that the opponents will be confronted with a variety of possible responses.
6. For most rapid perception, attention must be at its maximum focus on the thing to be perceived.
7. If the cue is so simple as to permit a focus of attention on response, the focus of attention on movement produces faster action than the focus on hearing or seeing the cue; in short, when the cue to act can be received incidentally, the athlete should concentrate his attention on making the first movements.
8. Auditory cues, when occurring close to the athlete, are responded to more quickly than visual cues.

Conduction of nerve impulse. The time of conduction of nerve impulse is so short for simple reactions that it can be ignored for this present analysis except when extreme fatigue enters. Even then, fatigue tends to appear as a slowing process chiefly when complex mental-choice processes are concerned in the response. This slowing caused by fatigue is great enough to cause an increase of accidents in auto drivers. Fatigue actually adds many additional feet to the distance traveled by the car of the tired driver before he applies the brakes. It is probable that a similar slowing effect occurs in athletic performance. The slower perception plus the slower movement of the overly-tired muscle may make a substitution of another player an important factor in the final score. If the contest does not permit substitution or rest periods, the more

fatigued team may be out-run or out-charged. The tired players in basketball tend to make fouls because they no longer react so quickly. They are caught a half-step to the rear, or make their stab for the ball a little too late and hit the man instead of the ball.

Reaction time. Reaction time may be defined in two ways. It may be defined as the time that elapses from the occurrence of the stimulus, or cue to act, to the beginning of the muscle movement, or as the time from the occurrence of the stimulus to the completion of a simple muscular contraction. The first definition includes the time taken for perception that has already been discussed. If the perception is a simple thing like hearing a gun or seeing a dropped flag, the amount of possible improvement of perceptual speed is less. The techniques of preparatory movements can be improved so that response time is shortened. As mentioned above, the direction of one's attention to the motor act can shorten the response time. The remaining factor, under the second definition, is that of muscle contraction speed.

Warming up, physiological condition, and degree of motivation, all affect reaction time slightly. To a large degree, reaction time seems to be unaffected by training. In other words, a player of slow rate of muscular contraction will increase his speed some by training but probably never will be fast enough to excel in team games, or the dashes in track. The slow starter in track may be helped by training in focusing his attention on the push-out from the holes, by teaching him a bunch start, and the like, but if tests show that his muscle contraction time is average or less, he is probably wasting time in trying to make a dash man of himself. It is true that there are some relatively slow starters among dash men who can run fast after they get started. This relative slowness is evident only when compared with that of dash men, not when compared with the human average. Even so, such men are handicapped in the short distances and should put in a lot of time in trying to improve this aspect if they expect to compete in the dashes.

Often, slowness in starting is due to wrong focus of attention, improper preliminary "getting set," improper starting position, or

some such extraneous factor, rather than lack of adequate reaction speed, if the runner is really fast after he gets started. Many a coach has taken such an apparently slow starter and changed him by teaching him to focus on the first push-out, to use a bunch start, to assume a better postural angle on the "get set" signal, or to time his preliminary tensing of the muscles so that he anticipates the sound of the gun.

There are many occasions in team games in which a faster reaction time is more effective. How much difference faster reaction time makes is not always realized; for example, one occasionally finds an athlete who seems to be able to throw a "light, soft" ball rapidly. Such a ball is easier to handle by the receiver. Many times, the receiver's subsequent actions are made successful by the ease with which he received the ball. The situation may be that of a peg to a base, a finger-tip forward-pass, or the soccer pass that seems to be "set-up" for the receiver. If a ball is started soon enough, "bullet speed" of travel is unnecessary. The quicker release makes possible a slower rate of travel. The above-mentioned soccer passes, football passes, or baseball throws may "float in," yet arrive soon enough to make the receiver's job doubly easy. Precision of placement, so that the receiver's next act can be made with little additional motion, is usually a part of these successful "soft" throws or kicks.

Studies⁵ have reported that gymnasts and wrestlers react more slowly, on the average, than do team-game athletes. It is possible that the slower reacting individual might have a greater degree of success in the individual sports. It also is likely that the speed of reaction varies greatly with the type of activity by which they are measured. Hypothetically a somewhat slower reaction could be a resultant of gymnastics or wrestling. It is a well known physiological fact that excessive strength exercises tend to increase too greatly the viscosity of a muscle, and that because the more viscous muscles have greater internal resistance to motion they are slower. Strong, heavy muscles tend to preserve a higher degree of tonus, be

⁵ John B. Thune, "Personality of Weight Lifters," *Research Quarterly*. 20:3. October 1949. Pages 296-315.

more viscous, and more difficult to relax. The heavily muscled athlete has his movements slowed by the viscosity of the muscles acting and the resistance of the high tonus in the antagonistic muscles.

The preceding paragraph deals with group averages and may not be applicable to many individual cases. There have been short, heavy-muscled dash men in track, short, husky forwards in basketball, and cat-like tumblers who seemed to be covered with heavy muscles. Such thick muscles probably have to be carefully trained to preserve speed, spring, and elasticity.

Explosiveness. The possession of great speed of muscle contraction means more power, speed, and spring, and permits adequate action by the use of fewer body parts. This muscle-speed quality, called explosiveness, varies greatly from individual to individual. It is not uncommon to find individuals with twice the explosive speed of others on the same athletic squad. Some athletic events put a premium on this aspect. The good high jumper is one example. The catcher who pegs second with a forearm and wrist snap while scarcely rising from his crouched position, is another sports example.

The forearm and wrist snap of the great handball player and the six-inch knockout jab of the champion boxer illustrate this contractile speed in still other forms. The Forest Hills matches in tennis usually bring out some example of almost phenomenal speed of muscle contraction; so do the performances in almost every game at the Big League ball parks. The snap throws are almost characteristic of infield play. The modern game of professional basketball requires a high degree of explosiveness. The player's passes and shots must be forearm, wrist and finger flips. Use of more of the body would reveal his movements to the opponents sooner. The necessity of the split-second action of the quick, concealed movements requires both the short levers and the tremendous contractile speed.

Preparatory set and posture. Preparatory set and posture for more rapid action includes higher tonus and partial flexion in certain muscles. In batting, for example, the grip is tightened just as

the pitcher delivers the ball, with the arms and wrists bent. In general for athletic contests, preparatory stance will include a coiled or semi-crouched posture and a lowered and forward center of gravity. The defensive center behind the football line, the infielder in baseball waiting as the ball is pitched, or the tennis player ready to receive the serve, are examples. With the bending of the knee, the center of gravity moves forward a little to be practically over the balls of the feet.

For general readiness, the heels usually remain just touching the ground even after the knees bend. The knee bending with the heels remaining close to the ground has the effect of making the angle smaller between the top of the foot and the shin. This decrease in the angle at the instep permits a longer arc of rotation, hence a greater distance of application of force when one springs or pushes from the feet. Slight ground contact of the heel aids in balance and decreases tension. The strong toes of the athlete prolong the distance through which the force of foot extension is exerted. Contrary to the popular phrase, one is not "up on his toes" when he is in a readiness position in team games. The contact with the ground includes more of the foot than just the toes. The best instep angle for prolonging the application of force in quick starting from semi-erect positions necessitates the heel position touching the ground with the center of weight being over the transverse arch areas. This semi-erect, readiness position is usually necessary, particularly in defensive situations, because the next move of the opponent and his direction are uncertain. Frequently, the feet are rotated outward almost at right angles to each other so that the first move can be made effectively in almost any direction.

There are, of course, many exceptions to this general description. The defensive guards in football will likely have a center of gravity so far forward that part of their weight is on a supporting hand. The defensive men in most team games find it necessary to keep their centers of gravity lower and nearer the center of the base than do the offensive men. The dash man in track has only one direction to go, hence thrusts his center of gravity out toward his

advanced hand-supports and adds a great amount of body "bunching." He expects the force of gravity to assist him in a rapid start as he removes his hand-supports. When such a type of forward motion is previously ascertainable, the body slant can be so great as to bring the heels off the ground yet permit the narrow angle at the instep. The base is kept narrow laterally and the whole concentration is placed on the straight ahead movement.

The football lineman, on the other hand, must preserve a phasic (moving) stance that, in order to have more stability in a lateral direction, must be wider and have the center of gravity less far forward. The defensive line backers keep their centers of gravity within the base formed by their feet alone, remain semi-erect but with a lowered center of gravity for greater stability, spread their feet laterally for wider base, and toe out. They can see better from the higher position and they may have to move in almost any direction. They glide without crossing feet in the preliminary preparatory movements lest they be confronted with the need to change direction from an awkward position. While gliding along to intercept a play, their bodies remain relatively crouched and their knees do not straighten completely. When it is necessary to run rapidly, they try to take small enough steps so that the center of gravity is rarely out of control. The elusive offensive halfback can evade with ease the long-striding defensive back.

(1) Lower center of gravity, (2) lateral width to the base, (3) weight on the balls of the feet, (4) knees rarely straight even in running, and (5) a center of gravity kept under delicate and rapid control, are characteristic habits of athletes in games that require sudden and frequent changes of direction. These postural habits are characteristic of *readiness in motion* as well as readiness of static posture. The athlete displays these static and phasic motor habits before and immediately after each act, in preparation for the next act. When sudden movement may be necessary the good athlete is rarely caught with a straight knee or with other completely straightened joint angles. From such bent-knee preparatory running has come the well-known statement that "the good athlete always runs as if his pants needed pressing."

In soccer, the strides in phasic (moving) preparatory positions tend to be extra short so that the body is almost always in control. The passer must be almost over the ball as he deflects it with his outside instep. There seems to be value in soccer of the in-pointed toe so that the ball can be handled by the long outer surface of the foot. This continual habit of flexing the ankle so that the toe is pointed down and inward, and the accompanying shorter steps, makes the moving posture of the soccer player a little different from that of the baseball infielder, the football defensive back, the tennis player, or the basketball guard. The soccer player tends to rotate his kicking toe inward on many kicks in order to make contact with the instep, and not hit the ground with the kicking toe.

Near the extreme of muscle contraction, the efficiency seems to be a little less and the angle of application of the force less advantageous; for example, when one prepares to push or strike with the heels of his hands, he usually starts the movement from an arm angle of 90° , or slightly more, at the elbows. The angle at the knee for jumping or rebounding in basketball, for starting the shot put or the discus throw, and similar sport movements, tends to be greater than a right angle. In athletic games, success is frequently dependent on shortness of time from the occurrence of the stimulus to the completion of the act. The short jab in boxing, the wrist and forearm flick in badminton or basketball, and the forearm and wrist snap of the squash or handball player put a premium on short arc of swing. Movement through the longer arcs takes too much time.

Preparatory flexions tend to decrease the angle at the joints to less than the right angle only when the long movement of the uncoiling body permits additional time for the arm, say, to extend. The arm bend in the shot put is an example of this extra bend at the elbow, and in this case there is adequate time for the use of the longer arc. In this same skill, the angle of the right thigh with the body may even be less than a right angle either at the start across the ring or after the right-foot, gliding hop. The pitcher in baseball has no problem of hurry to get the ball to the catcher.

He can take his time in winding up and use as extensive an arc as he wishes to deliver the ball. The longer the arc through which he can apply force to the ball, the greater its momentum when it is released. The catcher's problem is entirely different when, for example, there is a man stealing second base. His problem is to see *how soon* he can get the ball to second base, not how fast it will be traveling when it gets there. He has no time to use a long arc for throwing.

Work methods to increase speed. The preliminary warming-up to reduce viscosity, increase elasticity and flexibility, and tune the system to a higher physiological tempo (heart rate, blood flow and pressure, respiratory adjustment), adds to possible speed. The preliminary muscular tonus and partial contraction, a suitable stance and an attention focus add to speed possibility. The reduction of stimuli-reception to rapid perceptual habits and the reduction of the resultant movements to fast-reacting habit patterns also make greater speed possible. Pre-planned signals or rhythms permit action to start sooner by anticipation. The shortening of the arc of swing permits a quicker release for throwing, or a quicker contact if striking is the purpose. These are physiological, habit, and mental adjustments to increase speed, that have already been discussed.

Shortening of radius. Shortening the radius is a technique for increasing speed with which a lever moves. The shorter lever will move faster with the same amount of force applied to it. The track man brings his rear foot through close to his buttocks on his stride in order to take advantage of this shortened-radius speed principle. All the throwing and striking movements mentioned earlier in which the emphasis was on forearm or foreleg movement take advantage of this speed principle of the shortened lever. In a game like lacrosse, the offensive men usually use shorter sticks than the defensive men because offensive success depends so much on sudden flips and quick releases.

After momentum in a throwing or striking movement has been generated by longer radius and a long arc of swing, the speed may be increased by suddenly shortening the radius. This effect is seen

in the "pull-in" at the last of the arc in the hammer throw, in the backward thrust against the forward leg by the batter in baseball, and so on. The snapping of a towel or a whip are common examples of the same principle.

Tucking. The diver and the tumbler use the short radius principle when they tuck to increase the rate of their rotation. The torque (force to produce the rotating movement) of the diver or tumbler comes from the impetus given as he leaves the supporting surface, and clearly can not be increased after the contact with that surface is broken. If the athletes double up so that the mass of their bodies is closer to the center, they revolve much faster.

The "tuck" principle becomes clear if we think of the body being made up of many particles all revolving around the center of gravity. The energy toward rotary movement produced by the spring off the board or mat will drive all these body particles, but the outer ones are at the end of long radii and use up more energy in turning through the longer arc. However, when the legs and arms are tucked in close to the trunk, it takes less energy to rotate them; hence the other particles get more of the total force, and the whole body revolves faster. The ice skater gets the same effect of difference in weight distribution and its direct relation to speed when he spins on his toes with his arms extended, then draws them in close to his body.

Rapid diminishing of velocity. When the body is off a supporting surface its velocity in a horizontal direction diminishes rapidly. The basketball player utilizes this principle to decrease his momentum on a fast-break. He jumps in the air but delays his attempt to shoot until his velocity has decreased so that the released ball will carry with it less velocity transferred from his own body rate. The coaches tell the player "to ride out the jump before shooting." The reverse situation in which the jump is a handicap occurs at times. The high school boy who takes a long jump, going down to first base, in an attempt to beat the ball on a close play, gets there more slowly than he would if he had continued running. The dash man who broad-jumps through the tape is using a slower technique of arriving. The hurdler who fails to whip his foot down to the

ground, as he crosses the hurdle, floats through the air a little longer. He is slower than he would be if he were to thrust his foot down quickly (with the knee bent) as it clears the hurdle in order to add additional push sooner.

Power and speed. Power is defined in physics as the amount of work done in a given time, or force times speed. Power will be discussed at greater length in Chapter IX under "Strength." It is mentioned here because of the speed factor. In sports, one thinks of the powerful athlete not as the strong athlete only but as the one who can exert his great strength quickly. The smaller man who can swing faster may hit as hard, or as far, as the heavier man who swings slowly. The technique was mentioned earlier of exerting force through a longer arc to increase speed. This longer-arc technique is characteristic of pitching form in baseball, of driving in golf, and of weight throwing in track. Body weight is moved from the back foot to the front foot as a part of the technique for increasing the span of the arc. Sometimes a stride is taken or even a short turn to increase momentum. When the rules of the contest control the amount of foot movement, the body may be leaned backward over the back foot at the beginning of the act as a means of increasing the range of the motion. The pitcher in baseball and the shot putter in track take this backward lean.

The whiplike or coil-spring action of the human body in its throwing and striking movement-patterns is a remarkable phenomenon. The movement of the body may start with the push by the toes, continue with the straightening of the knees and the trunk, add the shoulder rotation, the upper arm swing, and culminate in a forearm, wrist and finger snap. The timing is such that each segment adds its speed to that of the others. The shorter lever principle is used to accentuate many of the particular speeds of this uncoil or whip. The rotation of each segment around its particular joint-fulcrum is made at high speed for that particular part; but this segment rate is accelerated tremendously because of the fact that it rotates around a fulcrum already highly accelerated. All the accumulated speeds of the body are present at the elbow

when the forearm snaps over this fast-moving elbow-fulcrum to release the ball. Most of the distance throwing or striking acts illustrate these speed principles. One does not "hit with his feet" but he does start the momentum with his feet.

An important aspect of this multiple action of acceleration is the introduction of each segment movement as late as is possible in order to take full advantage of the peak acceleration of its fulcrum. The arm is kept so far behind that the chest muscles pulling against it are tensed and stretched. The final wrist snap is postponed until the last instant before release or, in striking, before contact. In golf, for example, the arms are approximately over the ball by the time the wrist snap is started. In baseball, the batter snaps his wrists just as he hits the ball. In football, the punter puts the last snap into his knee and foot as, or a shade after, he makes contact with the ball.

It is this last-moment acceleration that is meant by such coach directions as "block through the man" in football, or "punch through the man" in boxing. The principle is to preserve the maximum acceleration up to the last instant of contact. This concept is sometimes confused with the idea of a full, free, uninhibited motion of body inertia after the contact is over. The first principle, of maintaining increasing acceleration as long as there is contact, is sound. The second principle is sound only when such relaxing follow-through will not interfere with speed of the next act. This point will be discussed at greater length in Chapter X under "Form."

Other speed factors. An Eastern college rope climber in 1950 was able to climb the rope in three and six-tenths seconds although his speed of muscular contraction seemed slower than some of those he defeated. He was so strong that he could with ease climb the distance in seven strokes. His arm continued to shove him upward after his hand was below his chest and even below his waist. He was strong enough to turn the downward pull into an upward thrust as his grip on the rope passed shoulder level.

If an athlete's arms or legs are long and he can use them effectively, he can apply force through a longer arc, and thus have

greater speed. Baseball pitchers tend to be considerably above average height; so do weight men in track. The dash men have tended to average about six feet in height. There have been a very few in the championship brackets in the dashes who were only average height, and a few more, perhaps, who were considerably over six feet in height. Metcalfe and Woodruff are examples of the latter. It was reported by some of the boys at Pittsburgh who measured the strides of Woodruff in the dashes that he took a twelve-foot stride.

Speed movies have shown that dash men average a longer stride than distance men. It is also evident that the athlete with the longer legs (hence steps) would get there first if he could move his legs as many times per second as the shorter man. The possible speed advantage of the longer levers is apparent. The same speed factor is evident in basketball where the taller man may take only one step and a reach to cover the same distance that it would take the smaller man two steps, a jump, and a reach. There are exceptional small men who make up for this lever handicap by the possession of great explosive speed in their muscles. The coach says that, allowing for these exceptions, "the little fellow runs too long in the same place."

Playing surface and speed. The surface on which one is playing affects speed. A wet track is slower than a dry track. A track man with spikes can run faster than he could with tennis shoes. Tennis shoes slow one up on the canvas of the boxing ring. The football player can start faster on a muddy field if he has mud cleats on his shoes, but faster on a frozen field if he wears tennis shoes. Sandy, dry tennis courts make changes of direction slower. Starting and changing directions are slower on dusty or waxed basketball courts. In the latter case, a damp towel to remove the dust from the shoes helps in case of the dirty floor, and a very little grease plus a light dusting with rosin helps the shoe traction on the waxed floors.

Summary. Speed is a complex aspect of behavior. It includes time of recognizing and time of reacting. The more complex the situation to which one reacts, the slower one is likely to be.

The athlete can accelerate his speed by learning proper attention focus and suitable preparatory sets and postures. The rate at which he can contract his muscles is an important aspect in his relative speed. The length of his arms, legs, wrists and fingers affects speed in some acts. Certain physical principles govern speed: shortened radius for quicker action, longer arc for imparting greater momentum, centering weight for speed in rotation, and multiplying speed by sequential but overlapping and concurrent movements. The question an individual athlete must answer is what kind of speed is most effective for his particular work method.

ACCURACY

*Man will speak of the marksman (William) Tell
As long as the mountains rise out of the ground.*

Trans. from SCHILLER's *Wilhelm Tell*, Act. 3, Sc. 3.

Basic nature of body control. The body control acts like a type of servomechanism or closed-loop control. Examples of such mechanisms are familiar to the reader in automatic aiming and firing weapons, or at a crude and less complex level, in the simple thermostat temperature control of the modern home. In the human body, a group of muscles readjusts movement errors signalled by the sense organs. As the readjustment for correction of inaccurate movement nears completion, the muscular force applied for correction decreases. Moreover, the antagonistic muscles pick up additional tension that acts like a brake to the movement.

Great speed or great force in the movements of the body make control less precise. There even seems to be a critical momentum of body movements above which control goes to pieces. If the performer adds too much speed or power, loss of control (loss of accuracy) may result. The continual readjustment of the movements, that goes on in the closed circle of sense organs-to-muscles is upset by too great inertia of any group of movements. The opposing muscular force can not check the movement until it

swings too far. An unsteady, back-and-forth, "hunting" effect occurs.

Any cause which upsets the balance of energy, such as speed beyond the habit rate, over-tension of the musculature due to emotional excitement, or sudden upset of the control-system (sense organs) signals through attention-distraction, may affect control adversely. Moreover, the human system may be upset by trying to reduce its control to too great precision. The excess effort for extreme delicacy of discrimination produces a fluctuation back and forth over the center ("deadspot") aimed at. However, if the speed of movement can be reduced to a minimum, as in rifle shooting, for example, and the exerted force can be made very small, only slight instability of aim occurs with the "trigger squeeze."

Order of learning speed and accuracy. Accuracy means precision of movement, and generally is used in the sense of exactness in projection of a force. A rather common theory is that skill is best acquired by learning accuracy first, before the skill act is attempted with much power or speed. The theory seems sound in reference to those sports in which the particular movement pattern of the skill can be approximated at slow speed. The tucking movements in tumbling and diving include a time element that seems to be learned only in the performances, and of course the performances can not be done slowly. Slower movements can be executed if some sort of supporting harness, like the Pond-Medart Twisting Belt, for example, is used. The precision and exactness in meeting the mat or water after a complete body rotation needs the regular-speed drill for learning. In baseball, the coaches recommend that the young athlete learn to throw and control his *fast* ball first, and to leave the skill of curve throwing until later. When the athlete starts on his learning of curve-throwing, he must throw the ball fast enough to make it break sharply or his curve turns into an ineffective "roundhouse."

Lipovetz quotes an experiment of Ragsdale⁶ that seems to indicate

⁶ Ferd John Lipovetz, *Medical Physical Education*. Minneapolis: Burges Publishing Co., 1948. Pages 170-171. Quotes experiment of C. E. Ragsdale on speed versus accuracy.

that fencing skill is acquired more rapidly if practice for speed precedes practice for accuracy. In handball, teachers have reported that the beginners make more progress if they specialize on acquiring adequate speed in the earlier stages, then work on placements and "kills" in the more advanced levels. In track, runners attempt to acquire a precise movement-pattern that is used only after they attain high speed in the race and are approaching zero acceleration. This movement-pattern when acquired with great exactness of front-foot placement and push, body slant, and rear-foot bounce, permits greater speed with less effort, but it can be practiced only at high speed.

West's⁷ study seemed to indicate definite superiority for those who emphasized speed in learning, for all skills except those of the simple response type. He reported that those subjects who practiced slowly in the early stages (1) developed techniques not successful at faster rates and (2) reached a theoretical limit of ability at a speed 25 per cent lower than the "all fast" group. Fulton⁸ also reports better final results when early training emphasized speed. She implies that the type of control is specific to the rate at which the skill is learned. The preliminary precision training seems to make the total learning progress more rapid in some skills. The steps in the javelin and the shot put may be examples illustrating faster learning with preliminary work on accuracy of movement. It is possible that a faster rate in early learning, but with lighter projectile, might produce faster learning. Additional experiment is needed on this point. The swing in golf is by tradition taught slowly at first with emphasis on precision of stance, grip, and weight-shifting technique.

Fencing and handball skills have been mentioned as possible skills in which speed learning seems to take precedence. Probably in many situations speed and accuracy should be developed simultaneously. The baseball pitcher mentioned earlier was learning

⁷ Wilbur D. West, "A Study of Speed versus Accuracy in the Acquisition of Skill." (Ph.D. dissertation, University of Michigan, 1936.)

⁸ Ruth E. Fulton, "Speed and Accuracy in Learning Movements," *Archives of Psychology*. No. 300. June, 1945.

his control *with* the learning to throw "the fast one down the middle." In basketball, speed and accuracy of passing and shooting may be more quickly acquired *together* in such a pattern as the fast-break. The evidence for best order in most skills is entirely inadequate to date. It seems that the athlete can, with much practice, acquire both speed and accuracy in many skills by either taking precedence in order of learning or by acquiring them simultaneously. Experimental evidence is lacking concerning which order, per skill and per sport, produces most rapid skill acquirement or highest final peak.

Youth's preference for speed. One difficulty that is encountered in teaching is the young athlete's preference for putting on power demonstrations rather than accurate performances. The high school boy wants to hit the baseball or tennis ball hard. He wants to take a full-speed, running throw at the basket with the basketball. In baseball, he is likely to hurt his arm by trying to throw too hard too soon. One of the most frequent suggestions of the baseball coach to the young batter is, "Don't try to kill the ball; just meet it."

The radius and the arc for greater accuracy. Some of the techniques already described under speed are effective for securing greater accuracy. The shorter lever can be moved with less force and so is subject to finer control. Moreover, because it can be moved more quickly (less inertia to overcome), it can be used to take greater advantage of opportunities to express accuracy. A longer arc of throw may aid accuracy also, because by permitting a closer approach to the target, it lessens the chance of error due to distance. The longer arc may permit more guidance and re-adjustment of the path of movement as the follow-through maintains contact with the projected object; for example, the fingers stay in contact and guide a basketball up to the last instant that the reach permits. The tennis racket may guide the ball along its path almost a foot after the strings first make contact.

The change of the radius length so that the arc can be flattened is another technique. If the throwing arm can be shortened as it approaches the shoulder and lengthened as it passes, the path of

the object hurled may approximate a straight line while the force is being applied. The javelin throw is a good example of this technique. The javelin could not be thrown successfully with the throwing hand swinging in the arc of a circle. In throwing and striking, the step toward the target decreases the distance, gives added precision to the direction of the motion, and aids in flattening out the arc of applied force.

The use of successive radii (the legs in stepping) makes the motion translatory much as the motion in the axle of a vehicle is translatory although the spokes and rim are rotating. This principle of changing radii successively to produce translatory motion is also followed by rotation of the body parts at successive articulations so that the terminal segment exerts the force in a straight line. The body parts rotate in a successive order with varying lengths of radii to preserve this straight-line movement. Learning to co-ordinate rotatory motions to produce linear motion at the end of an arm or leg is basic to many accuracy skills.

Posture for accuracy. Posture for accuracy varies with the type of action. The preliminary position (right-handed person) for throwing or striking turns the left shoulder toward the direction of the object that is to be hit or thrown. The principle of body shift of weight from rear to front foot applies equally to throwing and striking. Also, for accuracy, the front foot is in contact with the ground before the weight shift. The weight shift adds much momentum to the throwing or striking effort.

In addition to the weight shift from rear to front, the body is rotated at the hips in a movement that accompanies and tends to lead the arm swing. This trunk rotation usually brings the front of the chest at almost a forty-five degree angle to the line of intended direction of flight of a tennis ball (forehand) at the moment of racket contact and at a larger angle at the instant the ball leaves the racket. In hitting a baseball, this chest rotation is advanced until the shoulder on the striking side is only a few degrees from reaching the forward distance of the other shoulder. At the moment that the bat contacts the ball, the right arm tends to be in front of the right shoulder.

Hockey and lacrosse scoring is usually done, at least from the shorter distances, with only a forearm and wrist snap. The eyes are toward the goal during the execution of the throwing act, and the body faces that way when time permits. In static postures such as those employed in archery and rifle shooting (standing), the body is at right angles to the line of flight of the arrow or bullet. The face is rotated toward the target. Although the side is toward the line of shooting, the feet tend to be rotated outward to add to base stability, instead of being perpendicular to line of flight.

Several principles that apply to preparatory positions for accuracy are listed below.

1. When possible in team games, receive the ball or puck in position, and on the side, for immediate throw. This readiness gives the defense less time in which to interfere with accuracy movements, and also permits time for accurate throw while defense is shifting. The last pass before a scoring attempt must be executed so as to permit such a position.

2. Have footwork habituated so that balance and weight shift permit accuracy. Examples:

- a.* Short, gliding step of batter completed before contact is made with ball thereby preventing late body-base shift from interfering with accuracy.

- b.* Non-striking foot of soccer player beside ball and close to it to insure a balanced base over which to execute the passing act.

- c.* Step with toe pointed toward target in pitching, or toe of non-kicking foot pointed in desired direction of flight in football punting.

- d.* Center of gravity far enough in front of heels so that quick adjustment is possible, in fielding peculiar hops in baseball, in catching quick dropping or twisting punts in football, or in stroking a twisting bounce of a tennis ball.

- e.* Feet flat on ground, knees bent, weight low, and base wide if position must be held against collision by base runner, or against opposing rebounder jockeying for position.

3. Develop adequate leg strength so that early fatigue does not affect steadiness of postural base.

4. Use extended opposite arm or leg (as a counterbalance) to preserve balance and stability when needed.

5. Individualize the body parts by training so that they can work independently of each other if necessary, and without supporting base if the situation demands such quick action in fielding bunts, flicking passes or goal tries, heading in soccer, or diving saves in goal tending.

Flexibility. Precision of movement necessitates flexibility in joints that are to be used. The soccer player must have flexible ankles; the swimmer, flexible shoulders; the baseball, basketball, hockey, or lacrosse player, flexible wrists. Most of the throwing or striking in team games requires flexible wrists and fingers for accuracy. The stiff athlete fumbles low passes or falls wrong and gets hurt. He lacks the wrist and finger flexibility to put the last guiding touch on his curve or his goal toss. The "limp," limber athletes with the relaxed stance and the elastic muscles excel in many sports. They look nice and win in gymnastics. They have a softness of touch to the basketball that "eases" it over the rim. The baseball scouts like the prospect who makes loose, flexible, free-flowing types of movements.

Warm-up. The principles of physiological efficiency mentioned earlier in connection with warming up before competition are especially applicable to accuracy. One tunes up his physiological mechanisms, checks and puts a last minute touch to his motor patterns, and readjusts his perceptual habits to the somewhat different backgrounds. The muscles become more elastic and more ready, body flexibility is increased, and the skill patterns get a motor rehearsal that warms and activates the muscle patterns and removes any chance sluggishness or temporary resistances to performance.

Adjustment to background. The readjustment of the perceptual habits to the changed backgrounds is important in athletic skills. The basketball player will shoot short when he first works out on a strange court with tremendous open areas behind the backboard. This statement implies that his home court has walls

closer to the back of the basket. Baseball fielders on strange diamonds readjust, by practice, their distance perception for home plate. Golf players prefer to play a few practice rounds on a strange course before tournament play. Tennis players want a little practice in seeing the ball against any unusual court background. Football punters can place the ball rather well on their own field from the quick habit perception of place of standing and consequent distance. They seem to punt yards closer to the goal line in their out-of-bounds placement. On the strange field, they need additional practice in order to adjust their distance perception to as-quick and as-exact a discrimination.

Adjustments in skill. Skill adjustments for accuracy and preciseness usually involve: (1) the improvement of preliminary balance, (2) improvement in the angle at which the force is applied, (3) advantageous shifting of weight, (4) a change in the arc of the swing, (5) the adjustment of breathing, and (6) a change or simplification of the movements involved.

Improvement of preliminary balance is illustrated by changes involving steadier and wider base (archery, rifle), shorter steps with more exact control of center of gravity (soccer, infield play in baseball), and the use of the opposite arm and leg to counter-balance (figures in skating, the movement across the ring in the shot put or discus, and many routines in gymnastics). Improvement in the angle of force is illustrated by the horizontal swing of a bat, racket, or putter, the instep kick of the lower leg in soccer, or the pull up in the pole vault just as the body's center of gravity comes even with the pole on the swing.

The shift of weight to improve accuracy is chiefly advantageous in its effect on arc and distance. The weight shift permits an increase of length of the arc with a flattening of this arc and a longer readjustment in the minute corrections for precision. In addition, the force is applied a little closer to the final spot at which one is aiming. Examples of these last techniques are seen in a ball player's step on his throw, the step forward for the "right cross" in boxing, or the step and jump toward the basket on a goal try in basketball.

A slightly longer backswing may make it less necessary to apply extra muscular force and instead permit concentration on preciseness of movement. More important than this point, however, is the use of the longer arc with objects that are thrown, or objects, for example, a tennis ball, that may be kept in contact with the racket as much as twelve inches after first meeting the racket. These are the particular types of situations in which the objects can be guided a little farther along in their flight and corrected in a few more of their deviations. But a long arc *because of a long radius of a striking implement* is not conducive to accuracy. In this long arc, the error tends to be increased with the speed of the greater circumference because the farther out from the fulcrum, the faster the rotation and the more difficult it becomes to make accuracy readjustments during the rotation.

An accuracy readjustment in the arc of swing is produced by using shorter sticks or clubs, or by "choking the bat." This last technique of shortening the arc by shortening the radius is effective because the force needed to swing is less. Less forceful movements are much easier to control. Another advantage of the shorter radius of swing is that the amplitude of any error is roughly proportional to the distance from the point of application of the force to the point on the radius at which force is imparted to exterior objects. The baseball suggestion, "Take a shorter grip and just try to meet the ball squarely," is an example of application of the shortened-radius principle. Let the reader hold his pencil out near the eraser end when writing longhand. He will experience the increase of his normally slight deviations due to increased length of lever used.

Breath-holding during accuracy acts. In most sports, the breath is held during a sudden accuracy movement. This breath-holding occurs in the acts of throwing, catching, striking, or even starting in the sprints. Usually an inhalation, that partially fills the lungs, is taken and then held until the act is completed. Great stress has been put on this breath-holding by some teachers of archery and riflery. Some basketball coaches stress inhaling and breath-holding

for foul shooting. The athlete will tend to hold his breath during sudden acts without any training.

Simplification of movements. The rifle coach wants his boys perfectly relaxed and balanced. The shooting act involves careful sighting, and a slow, easy closing of the hand that includes in its diffused squeezing pressure, as an indistinguishable part, the trigger pressure. In archery, the pull on the bowstring is followed by an equally simple release. The archery coach wants only the outer part of the last joint of three fingers on the bowstring. The string is not held by the bend at the joint, but by a bit of flesh pressed into a roll near the fingertips by the pressure of the bowstring. As the draw is completed from the rear shoulder and the aim is determined, these three phalanges relax and let the string slide off. Many good archers do not even grip the bow but let the pressure from the drawn string hold it against the extended hand.

Putting in golf is one of the most delicate of the accuracy skills. The movement is most commonly a horizontal stroke executed by a short wrist movement. The putter almost pushes the ball along the intended path. The golfer is usually bent over with his eyes right above the ball. His body bend makes the radius of the swing very short. Unless the putt requires considerable force, the motion is largely confined to wrist action with a forearm actually resting on a thigh. The simplification of movement-pattern in these three skills, archery, rifle shooting, and putting in golf, is somewhat indicative of the present trend in sports to reduce accuracy skills to as few movements as possible.

Basketball shooting nowadays is becoming more and more a one-handed push with the wrist and fingers following the ball as far as possible and guiding it. Foul shooting usually stresses simplicity of movement-pattern. Even the boxer (right-handed) tends to rely on a simple jab from a partially extended left hand for much of his scoring. It seems to be a common hypothesis that the fewer the movements included in a skill act, the easier it is to reduce to habit performance, and the higher its final degree of accuracy.

A caution might be inserted about too extensive use of this above

stated hypothesis. It is possible that less movement, less arc, or less preliminary momentum may necessitate an extra amount of power quite difficult for the athlete to acquire in the few muscles utilized. Some good point-after-touchdown kickers take no extra step before kicking the ball, but most seem to be more accurate if they take a preliminary step to add to body momentum. Another example might be that of the foul shooting skill just mentioned. The older and stronger boy may toss fouls accurately without a knee bend but the high school player may lack the power to make this simpler form accurate. Even the simple knee bend and under-hand throw may need to be changed for the tall, gangly adolescent with weak legs. He may be so unsteady on his dipping and straightening-up from the knee bend, with his long, weak, and awkward legs, that foot stance and arm movements will both have to be changed.

Habit rate and timing. Athletic skills may become automatized in a specific *time-movement* pattern.

Change in timing of any part, or change in any movement-part, will upset the habit continuum. A boy who learns to take his time on long shots in basketball will be ineffective against a defense that hurries him. A football punter is sometimes less effective if his kicking is hurried. Many of the relatively automatized movement patterns . . . have a specific performance speed. . . . Patterns of sports, established after long practice sessions, may fail to function in games because the established timing of the patterns is too slow for the game, and change in timing upsets the automaticity of the performance.⁹

Movement habits and aim. Habit performance has the advantage of permitting full focus of attention on aiming, with almost no conscious attention on the preliminary movements. In basketball, hockey, or lacrosse, the athlete keeps his eye on the target after he has possession of the ball or puck. In baseball, the pitcher focuses on the target set by the catcher (usually the catcher's glove, knee, or shoulder), or, if he is throwing to first base, he focuses on and throws at the first baseman's right knee.

⁹E. C. Davis and J. D. Lawther, *Successful Teaching in Physical Education*, second edition. New York: Prentice-Hall, Inc., 1948. Pages 353-354.

In the striking skills, the attention is on the object to be hit rather than on the direction for placement. The batter, tennis player, or handball player follows the ball with his eyes up to the instant he makes contact. One tennis player reported an improvement in his game after he put on glasses solely because he had less peripheral vision with the glasses, and therefore had to turn his head to follow the ball to the racket. The turn of the head guided his stepping and body position. The head follows the eyes and the rest of the body tends to follow the head. The golfer and the diver can both attest to the importance of the head position. Even in javelin throwing, the best posture for throwing involves tipping the head back and bringing the eyes on a line with the forty-five to fifty degree angle of launching the javelin.

English. English refers in athletics to such spin on a propelled object as will change its normal course of flight. The hook in bowling is a good example. It is used by almost all great bowlers. It preserves its most effective direction through the pins a little better and spins and mixes them so that the total diffusion of force over pin area is greater. Isolated pins are less likely to remain standing. The tennis serve is another instance in which a spin (topspin) brings the ball down and makes placement in the service area easier at higher speeds. The twists, American and reverse, for example, have the additional advantage of possessing a sideways hop that increases the accuracy problem for the receiver. A back-spin stroke is used for the "drop-shot" just over the net because it does not bounce as far toward the base line. The deep slice is likely to upset the accuracy of an opponent but, if used to excess, is also likely to upset one's own forehand drive.

Curves are a necessary requisite of a good baseball pitcher. He puts excess spin on the ball and the air pressure builds up during the ball's flight on the side of the forward spin. When this air pressure gets great enough, the ball veers away from the side of the forward spin. A ball with a fast topspin will veer downward (the drop). If the spin is around the vertical axis of the ball from right to left, the ball will veer to the left. Flexible wrists and fingers are the chief requirement for curve throwing, assuming the

boy can already throw the fast ball. If too much of the release snap is transferred to the elbow in curve throwing, a soreness may develop that interferes with both accuracy and speed.

In basketball, a lot of spin on the ball makes a pass difficult to catch. English in basketball shooting is valuable when the angle under the basket from which the shot must be made is such that the ball must have a twist to it (English) in order to go into the basket. In most other basket shooting, a "dead ball" or one with just enough spin to keep it true in flight seems to be more accurate on the average. In golf, hooking or slicing for placement purposes should be left to the expert. A wide assortment of clubs and enough knowledge to pick the one to use will take care of the loft and the reverse spin for the average golfer.

English should be used intelligently or not at all. The chop in tennis if used as a deep shot will hang in the air and give the opponent extra time to place the return. Excessive topspin on the drive merely makes a nice, high bounce for the opponent to return. Many players tend to use too much topspin because by its use they can hit the ball harder and still keep it in the court, but the excellent bounce of the topspin stroke may often add to the accuracy and speed of the opponent's return. The flat drive is much harder to return; nevertheless its execution is also more difficult. Hard stroking on flat drives presents a problem in keeping the distance of travel within the other base line.

In baseball, the slower, and slow-breaking, curve may be easier to hit than the fast ball. In soccer, it is possible to score a goal from the corner-kick by using English on the ball, but the usual inaccuracy of the attempt makes a pass to a teammate better judgment. In bowling, the curve is difficult to keep accurate if the alleys are old, worn, and not highly polished.

Some spin is desirable on projectiles launched for distance in order to cut down air resistance, or even to take advantage of it. The spiral on a football adds to distance and is almost a necessity for the securing of distance against the wind. A discus spinning truly in the plane of its trajectory stays up a little longer and can

be thrown at a smaller angle of elevation than the javelin. A little backspin on a golf ball adds to distance in the air. The ball is hit a little below the horizontal line through its center to give it loft. The face of the driver has about a ten degree slope from the vertical to produce some backspin, and therefore greater distance.

Individual fluctuations. Players tend to vary through considerable range in their accuracy. They have various expressions to denote this phenomenon. They had "off nights" or they were "hot," depending on whether they scored little or many points. They have "late season slumps" and "can't get in the groove." Many of the fluctuations are unexplainable. Breaks in continuity of practice, over-fatigue, mental and emotional states, or undetected errors into which they have fallen unconsciously, may be contributory to the lapse in skill.

Overconfidence and self-satisfaction may produce a type of practice in which the athlete practices without trying to improve. A player does not remain unchanged in sports while practicing. If he is practicing at a mediocre level of effort, he is practicing some bad habits and some careless errors. These can very easily be adopted unconsciously. The athlete does not realize that much of his present form was taken on without awareness of its exact movements and movement parts. This lack of consciousness of exact movement applies to the period of learning and to the present relatively automatized performance. Small modifications can be adopted just as easily and just as unconsciously. If the athlete is practicing without attempt to improve, the changes might very well be for the worse. The longhand writing of the average individual is a good example of the effect of much practice without attempt to improve. The average adult has had many hours of practice in handwriting, but in spite of the fact that he has practiced almost daily since he left school he seems to write more illegibly as the years go by.

Physiological condition, emotional state, and fluctuation of attention reflect in accuracy. The athlete who is having outside worries falls off in his focus of attention. Investigations of acci-

dents of flyers, automobile drivers, and industrial workers all tend to indicate that emotional disturbance will interfere with accuracy of daily habit performance.

Fine skills like putting in golf, shooting in basketball, or stroking in tennis need daily polish. The athlete does not seem to be able to maintain his accuracy of touch without this daily practice. Paderewski is supposed to have said once that he had to practice hours on the piano every day, and that when he missed one day, he could notice it in his following recital. If he missed two days, his wife noticed the difference, and if he missed three days, even his audience noticed the difference. The fine motor skills of sports seem to need this same constant polish.

Discussion Questions

Speed

1. Assuming that speed of an individual is specific to the type of act to be performed, explain how one might possess a high rank in speed in one sport but not in another. Illustrate by example.
2. Is there a correlation between rope-climbing speed and speed in the sprints? Would a quick soccer player be a quick basketball player?
3. Suggest ways in which perceptual speed in sports might profit greatly by a "speeding-up" series of practices. Think in terms of the work that the Armed Services did in speeding up plane recognition.
4. What is the relationship between the number of choices of response open to the athlete, and the speed of his response? Illustrate from sports procedures for decreasing choices in order to speed up response, and procedures to increase the necessity for *choice* response by the opponents.
5. Give examples from sports in which the athlete's attention should be diffused over considerable area in order to speed up his response, and examples in which concentrating attention speeds up response.
6. On what should the athlete focus his attention when "on his mark" in track, or on the offensive line just before the charge in football?
7. Is it possible that the official does not see as many of the fouls committed toward the last of the basketball game? Explain.
8. Which gets the fastest response from an athlete, a sound signal or a visual signal?

9. Is a person's reaction time made considerably slower by fatigue?
10. What is the effect on reaction time of warming up? Of increasing the intensity of the stimulus?
11. What are some of the work methods taught the slow starter to speed him up?
12. Do team-game athletes tend to average faster in reaction time than gymnasts and wrestlers?
13. In what sports does explosiveness of muscles have greater advantage? In what sports does a high degree of explosiveness have little advantage?
14. Why is there so much variation in the preparatory set and posture of boxers?
15. Why is the heel kept touching the ground in most preparatory postures in team games?
16. What is the purpose of the shortening of a player's steps in team-game preparatory movements (meeting a ball in soccer, for example)?
17. Does the soccer player tend to "toe out" less than the football player? Why?
18. Why does the rebounder in basketball bend his knees scarcely half-way in preparation for jumping?
19. One famous dash man is reported to let his heels touch on each stride. Is this an advantage or disadvantage? Explain.
20. Why does the trackman bring his rear heel so close to his buttock when it swings forward on his stride?
21. What mechanical advantage may one get from using a shorter lever in throwing or striking?
22. How does one speed up his rotation in the air? On ice? Explain the principle involved.
23. Why may it be desirable for the boy on the fast-break in basketball to finish with a broad jump, but not the base runner going down to first base?
24. Can two athletes of the same weight and the same strength differ in power? Explain.
25. Why is the wrist snap delayed until the instant of striking, in most sports?
26. Explain the apparent contradiction in the fact that short levers can be moved more quickly than long levers, but dash men in track tend to average well up toward six feet in height.
27. Why do dash men tend to take longer strides than distance men?

Accuracy

1. Movements employing great force or great speed are more difficult to make accurately. Why?
2. How should one determine whether to emphasize speed or accuracy first in teaching an athletic skill?
3. Why do the young athletes prefer speed practice to accuracy practice?
4. What are the advantages of the short radius in achieving accuracy?
5. What are the advantages of the long radius in achieving accuracy?
6. Describe by illustration the process of flattening the arc through which force is applied.
7. Why does the tennis player turn his side toward the net as a preparatory position for stroking a tennis ball? The batter, his side toward the pitcher? Why does the archer not point his feet in the direction of the target?
8. The baseball batter's step tends to be short, to skim the surface of the ground, and to be completed before the swing. Explain the reasons for these three movement-characteristics.
9. The hip rotation tends to precede the arm swing in throwing or striking movements. Why?
10. Explain why the direction in which the advanced foot points tends to determine the direction that the ball is kicked or thrown.
11. What does leg strength have to do with accuracy of arm movements?
12. How does flexibility affect accuracy? Cite examples from sports.
13. How does the type of background affect accuracy?
14. Explain how a longer backswing may affect accuracy either favorably or unfavorably.
15. Should the athlete be *trained* to hold his breath during precise and accurate skill performance?
16. For accuracy purposes, should the movements of a particular skill be the simplest possible to select?
17. Why does the left jab score so often in boxing?
18. Why are so many more basketball players using the one-hand shot than the two-hand shot in the last few seasons?
19. Explain why the tennis player and the baseball batter are taught to keep their eyes on the ball, but the basketball player and the hockey player keep their eyes on the goal when shooting.

20. In tennis, why is it easier to keep a ball with topspin in the court even though hitting it hard? In what direction, relative to spin, does a ball curve?
21. What happens to a ball, traveling rapidly through the air, that has no spin at all?
22. Why should a javelin be thrown at a greater angle from the ground than the discus?
23. Why does practice "without attempt to improve" decrease accuracy?
24. What is the effect of emotional disturbance on accuracy?
25. What athletic skills need almost daily polish to preserve their accuracy?

Test Questions

Speed

1. Can one possess a high rank in speed in one sport but be relatively slow in another sport?
2. Can one increase his speed of "seeing things" greatly by practice?
3. Is speed of response slower when one decides between two or three possible acts instead of having the decision already made beforehand?
4. Does the track athlete focus his attention on listening for the report of the gun?
5. Does the basketball player generally focus his eyes on the player to whom he passes?
6. Is the response to sight signals faster than the response to sound signals?
7. Do team-game athletes tend to average faster in reaction time than gymnasts and wrestlers?
8. Does the preparatory posture in most team games involve a foot stance with the heel touching the ground? (Omit from consideration the stance of football linemen.)
9. Does one lengthen his stride as he approaches the ball in soccer?
10. Does the rebounder in basketball tend to bend his knees more than ninety degrees?
11. Is the present trend toward permitting the heels to touch the ground when running likely to increase the endurance but decrease the speed?
12. Does the good track man let his feet glide along close to the ground on the forward movement of the leg?

13. Is it better for the catcher to throw to second base with very little bend of his arm at the elbow during the throwing act?
14. Is the purpose of the broad jump at the end of a fast-break in basketball to increase the speed?
15. Can athletes of the same weight and strength differ in power?
16. Is there a trend toward the use of shorter men in most sports because short levers can be moved more rapidly than long levers?
17. Do dash men take shorter strides than distance runners?

Accuracy

1. Are force and speed positively correlated with accuracy?
2. Is it well known that accuracy should always be taught before speed?
3. May the short radius be an advantage in achieving accuracy?
4. May the long radius be an advantage in achieving accuracy?
5. In hitting a ball, is accuracy improved by a preliminary body stance approximately at right angles to the flight of the ball (side toward approaching ball)?
6. Does the hip motion precede the arm motion in throwing or striking?
7. Does body flexibility affect accuracy in many sports?
8. Is the type of background a factor in accuracy of shooting a basketball?
9. May a longer backswing affect accuracy favorably?
10. May a longer backswing affect accuracy unfavorably?
11. Is the flat stroke easier to control than the stroke with topspin in tennis?
12. Does a ball travel on a straighter path if it has no spin at all?
13. Should a discus be released at a greater angle from the ground than a javelin?
14. Does practice, even though it be without intent to improve, usually increase one's accuracy?
15. Is emotional upheaval usually conducive to greater accuracy?

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9

Strength and Endurance

STRENGTH

Strength? Why? Perchance to hold up the world, to clean the Augean stables, to pull down the Temple, or to impress a woman.

Traditionally strength has represented the expression of great force at low rates of speed. Atlas, Hercules, and Sampson are examples of the historical concept of the strong man. The hero of *Lorna Doone* tears a great limb from a tree with his bare hands when he finds himself without a weapon. The modern weight lifter is our closest approximation to the heroic strong man of old. Football has its giants in strength, men so strong that they can stand still in the defensive line and hold the charging opponents off, or lift them out of the way. Gymnastics has examples of men so strong in the arms and shoulders that they can hold various types of arm-supported poses even when their weight is not centered in their base, or sustain the body against gravity pull through slow, graceful routines.

One occasionally sees a basketball player use "brute force" to pull the ball from the hands of a rebounding opponent in order to toss the ball back into the basket. The spectators exaggerate this strength feat by saying, "If the other fellow had not let go of the ball, he would have been thrown through the basket too." It is a common experience to see football fullbacks carry tackling oppo-

nents for yards, and spread apart grasping arms, not through momentum but through sheer force of muscle.

It is a little difficult to isolate this strength aspect from the concept of power. Power includes rate of motion. If we take away the speed factor, we have an approximation of what is meant by the word, strength. One thinks about the amount of force that can be resisted, or the amount of push or pull one can apply to a relatively immobile object, as the indication of strength. The number of pounds registered on a dynamometer or a spring balance by the contraction of a group of body muscles is an indication of their strength. The total number of pounds one can lift is a traditional strength measure.

Strength versus power. There is some tendency in popular thinking to confuse power with strength. Power involves the rate of speed at which the force is expressing itself. The strong athlete who can also move quickly succeeds in such power activities as long hitting in baseball, heavy hitting in boxing, weight events in track, blocking out "would-be" tacklers in football or, if on the offense, bursting through for additional yards in spite of resisting efforts. The strong athlete who can swing a heavier bat adequately does not have to swing it so fast, in order to achieve the same hitting distance as the less-strong athlete swinging a lighter bat. Since power equals force times speed, if the athlete learns to make faster movements he increases his power even though the contractile pulling strength of his muscles (as measured on a dynamometer) remains unchanged.

The smaller man with enough speed may surpass the larger, slower man in power. Absolute power, or absolute strength may be difficult to evaluate because of differences due to weight and lever advantages. In hitting a charging sled or an opponent, the athlete weighing two hundred pounds will have to move only three-fourths as fast as the one hundred and fifty pound athlete in order to produce the same force. Saying this in another way, the one hundred and fifty pound athlete must travel at about the rate of the champion hundred-yard-dash man in order to produce the

same reaction as the two hundred pound athlete traveling only at the rate of a hundred yards in thirteen seconds.

Sports do have exceptional men ranking much lower in strength than in power. There have been a few relatively small men who were "power hitters" in baseball, heavyweight boxers, football guards, or even shot putters. These men usually have unusual strength for their size but, in addition, phenomenal explosive speed of muscle. In general, the powerful athletes are big, strong men who are also relatively fast in movements.

Relation of strength to endurance and speed. Some authorities have included, as measures of strength, activities that required considerable muscular force and that were to be continued as long as the individual could complete them. Other so-called tests of strength have measured how many such forceful movements could be done in a relatively short time. A distinction has even been made between "dynamic strength" and "static strength." For the purposes of this present analysis, the ability to persist at an activity, even though it be one that requires a high amount of muscular-force exertion per movement, will be classed as a combination test of endurance and strength. The number of forceful activities completed per unit of time will be considered to be a measure of a combination of a speed factor, an endurance factor, and a strength factor. The length of time one can sustain a forceful contraction of a group of muscles will be considered to be a measure of a type of endurance.

It is evident that strength, endurance, and rate of movement (speed) can not be isolated for measurement in many types of activities. The shot put, for example, places a considerable premium on strength, yet the individual who has a very low speed of muscular contraction ranks extremely low in the shot put. The football lineman requires a high degree of strength to withstand charging opponents, or to push opponents out of the way, yet a very strong boy tends to be unsuccessful in line play if he is very slow in movement.

In many sports force is of little value unless it can be exerted with a high degree of acceleration. Large muscles, capable of exerting

tremendous contractile force, are useless if they can not exert this force at a rate to fit the sport needs. One might think of the analogy of chasing a rabbit with a low-g geared truck, or of the bull with its colossal strength futilely pursuing the matador. On the other hand, a high level of strength is an important component of the boys who do "the heavy work" in football, of the wrestler, and of the gymnast. Combined with adequate speed and endurance, high levels of strength lead to excellence in most sports.

McCloy has advanced the theory that fatigue sets in much more quickly in one whose strength is at a lower level and who, therefore, makes his forceful movements with an effort closer to his maximum.¹ Howell² says that when a muscle is working too near its upper range of strength, its mechanical efficiency is much lower. In other words, a rather high development of the contractile pull of the various muscles is also an aid in the endurance factor. In repeated contractions not involving maximum pull, the developed muscle does seem to apportion its work to some of the fibers for some of the pulls and to others for other pulls. The well-trained muscle seems to have a greater number of its fibers developed in order to be capable of "taking their turn" with the work load. The reflexes of work distribution in stronger muscles would seem to have available more fibers conditioned to heavier contractile pulls.

Schneider and Karpovich say:

A gain in absolute strength does not necessarily mean a gain in endurance. True enough, a stronger man can perform work against greater resistance, but, when it comes to exercise with medium loads, a person with less powerful muscles may be the champion.³

For the purpose of this present discussion, strength of any particular muscle or muscle group will be considered to be that force

¹ C. H. McCloy, "Forgotten Objectives of Physical Education," *Journal of Health and Physical Education*. VIII:8. Page 461.

² W. H. Howell, *A Text Book of Psychology*. Twelfth edition. New York: W. B. Saunders Company, 1933. Pages 33-34.

³ E. C. Schneider and P. V. Karpovich, *Physiology of Muscular Activity*. Third edition. Philadelphia: W. B. Saunders Company, 1948. Page 22.

the muscle or group of muscles can exert against some type of spring balance or dynamometer.⁴ This type of strength manifestation has been measured many times and, for large groups, has been found to have positive correlation with skill-test batteries, health indices, and the like. The bigger boys, the healthier boys, and the more skillful boys tend to have greater than average strength. There are, of course, many individual exceptions.

Basic strength essential. It is clear that a basic amount of strength is necessary to perform sports skills. A youngster may be too weak in the arms to swing his bat or his racket in a horizontal plane. One famous tennis player gives this early arm weakness as the reason for his later use of two hands on a tennis racket. He is still using two hands in his national championship play. Coaches dealing with junior high school boys find that many of them reveal arm weakness in striking and throwing movements, and an unsteadiness of postural base that results from leg weakness. To be accurate, the throwing and striking skills should be executed from a body base that possesses enough strength to maintain adequacy of balance during the action. Situations like that of blocking a base line at home plate in baseball, or shoving an opposing lineman out of the way in football, require higher levels of strength. Rebounding in basketball requires strength enough to hold a position and to resist impact from other bodies. Wrestling and gymnastics have already been mentioned as sports stressing strength. The differences between the college rules in wrestling and those governing the Olympic wrestling are such as to make the strength factor of greater relative value in Olympic wrestling.

Development of strength. Extensive development of strength seems to be possible for most individuals. Strength is best developed through exercise against gradually increasing resistance; that is to say, the intensity of the work, instead of its duration, should increase. Individuals who undertake weight training programs, involving much of the major musculature of the body, may

⁴ The article by H. Harrison Clarke in the May 1948 *Research Quarterly* (19:2, pages 118-147), gives a detailed explanation of strength tests of this type developed for use with individuals having orthopedic disabilities.

become quite high in rank in the summation of their various strengths. *Weight training* is a use of systematic exercises, with weights used merely as the means to increase resistance to muscle contractions. The weights used are not heavy like those employed in the competitive sport of *weight lifting*.⁵ Many excellent decathlon and gymnastic stars have used *weight training* exercises to develop various strengths. *Weight lifting*, on the other hand, emphasizes *heavy* weights. The *weight lifters*, men who compete in the national and international championships, possess very large muscles that stand out with every movement. Steve Stanczyk, for example, one of the Olympic champions, has a 17½" neck, a 50" chest, a 19" biceps, and a 31" waist.⁶

Strengths, not strength. Men who do heavy work become strong in the muscles used in the work. They may remain relatively weak in any muscles little used in their occupation. This statement brings out the point that an individual has specific strengths, not strength in general. Each muscle or muscle-group combination has its particular contractile pull. A person may be strong in certain types of movements but weak in others. One of the objections to the modern trend in colleges toward one-sport athletes is the resultant specialization on fewer strengths, and therefore less all-round development.

Theories in the field of posture throw some light on the specific nature of strength. One posture theory is that the excessive development of certain muscles without similar development of their antagonists results in postural defect. The higher tonus of the developed muscles, not being counterbalanced, pulls the body out of normal alignment. A common explanation for the round-shouldered posture of the physical-labor worker is the statement that he has over-developed his pectorals without developing their antagonists.

Resistance exercises. Extensive muscular development through

⁵ *The Scholastic Coach* for December, 1947, and for February, 1948, presents excellent articles by L. E. Morehouse and P. T. Rasch on "Weight Training," pages 12 ff., and pages 13 ff., respectively.

⁶ *The Scholastic Coach* for April, 1947, opens with an article discussing the World Champion weight-lifting team of York, Pa.

maximum resistance exercises or heavy work increases the thickness of the muscles and changes the appearance of one's physique. The increased muscle thickness is due, to a considerable extent, to increased capillarization—an increase in the capillary area of perhaps as much as fifty per cent. There is hypothetically some chemical change that also adds to the size. The well-developed muscles have a better tone and tend to maintain a higher degree of tonus.

Muscles developed through strenuous resistant exercises tend to be thick, heavy and viscous. Viscosity means internal resistance to change of form, resistance to movement, and, therefore, less speed. Extensive maximum resistance exercises are usually accompanied by a decrease in the muscles' speed of contraction. The athlete who is building muscles through such exercises should be very sure to work adequately on speed and flexibility at the same time; otherwise he is apt to defeat his own purpose of improving his all-round athletic efficiency. Elasticity, flexibility and quickness are more important in most team games than great strength. It is for this reason, perhaps, that even those athletes who train systematically with weights tend to use the lighter resistances.

A practice of some years ago was to have football players engage in heavy labor over the summer to make them strong for the fall season. The trend now is away from such a practice. The feeling of coaches seems to be that *extra-heavy* labor builds a thick, slow muscle unsuited to the modern game of football. The player loses needed speed by heavy labor and perhaps develops a viscous, non-elastic muscle that will be injured more easily in fast play. These statements should not be interpreted to mean that the coach wants his boys to avoid physical work—quite the contrary. The old idea was to hunt the hardest work that could be found. The idea now is to find work that does not involve all-day maximum tugging and lifting.

The muscle-bound athlete. An athlete who is called muscle-bound often has strong, slow muscles and inadequate joint flexibility. He may also have developed heavy, viscous muscles that are the antagonists to many of the movements of his particular sport.

Quite frequently the boy appears "muscle-bound" in another sport only because he has never developed the particular muscles used in that sport. The enthusiastic gymnast who works twelve months a year at his particular sport does not have the type of muscular development suitable for baseball, for example. Perhaps his tense antagonists do resist a throwing motion. Perhaps, also, he has not had any practice in throwing, does not know how to throw, and is very weak in the throwing muscles.

Many men have developed heavy muscles that are elastic and quick in movement, but it seems, however, that the maintenance of the elasticity and quickness must be part of the training process. Even so, such men may need additional warming-up and stretching exercises before competition. One occasionally sees such heavy-muscled men who are quick—dash men, tumblers, basketball forwards, or baseball infielders. Such men are quite strong but, to be so successful, must have also another characteristic—great explosiveness of muscle.

Individual differences and age. There are great individual differences in the strength aspect. Heredity seems to be somewhat of a limiting factor. Man's muscle has been found to possess a greater strength than woman's when the cross section is held constant. In growing children, older children average greater strength when cross-section size is the same. The age of development of maximum strength seems to come later in life than the attainment of the peak of most other physiological aspects. In the sports in which strength is a very important item, champions and their close competitors often are thirty or more years of age. Some of the world gymnasts entered in the 1948 Olympics were also in the 1932 Olympics. The American team was one of the youngest of the teams entered. Champion wrestlers, weight lifters, hurlers of heavier weights (thirty-five pound, or the Scotch caber) tend to be men approaching or past thirty years of age. Some champions have been well past forty.

Apparent strength. Apparent strength is a combination of real force of contractile pull plus several other factors. The skill with

which the strength is applied, in order to take advantage of best leverage and best angle of force, varies the apparent amount of strength. The particular levers that an individual possesses, the point of attachment of his muscles to the bones for pull, and the amount of motivation are factors in apparent strength.

Proper use of levers (arms, legs, sports implements, and so on) and angle of application of a force are aspects of *form*. A person's levers vary in length with his body build, and the expressed force varies with the length of the lever arm. Long levers may provide advantageous position for force application. Tennis serving, volleyball spiking, left jabbing in boxing, and certain holds in wrestling are instances in which force may be applied more advantageously because of the longer lever. On the other hand, long levers may decrease the force because of the longer distance of the resistance from the fulcrum. This last principle may account for the preponderance of short, heavy-set wrestlers and football guards. All these examples imply the expression of both strength and speed. In action, the two can not be completely divorced.

The typical example of what intense motivation does to the strength aspect is the strength displayed by the delirious patient. The physiologists say that strength increases with strong motivation. Anecdotes are told of war situations in which individuals under stimulus of violent emotion have performed great feats of strength. The average coach feels that his boys can surpass themselves in moving the behemoths on the opposing line out of the way if they are stirred up enough.

There is considerable relationship between the size (cross section) of a muscle and its strength but the correlation is not perfect. Group studies have shown that muscles of the same size vary in strength with chronological age and with sex. Muscles of the same size also vary in strength from individual to individual. There seems to be a difference in *quality* of the muscle. Some muscles seem to be made of "better stuff" for contractile-pull purposes. One occasionally encounters the tall slim-muscled athlete who possesses strengths out of normal proportion for the size of cross section of his muscles. In any one individual, however, an increase in his

strength through exercise is almost always accompanied by some increase in size of musculature.

Present practices. Neither coaches nor experienced athletes of today are in agreement in regard to frequency and intensity of strength exercises applicable to athletic development. Some baseball players use a weighted bat for practice exercises in spring training as a means of strengthening their arms and shoulders. Football training regimens on most campuses are still characterized by daily work on the charging sled. Many wrestlers and gymnasts work out with bar bells and dumbbells as a means of developing needed strengths. Generally speaking, coaches of young, "teen-age" boys use exercises involving forceful movements (overload) for building up the strengths of these weaker athletes.

Traditional exercises like squeezing a tennis ball, practicing basketball passing with a medicine ball, and the like, in order to develop arm and shoulder strengths, still continue. One hypothesis that may be worth consideration is that strength training for speed games should not involve, to any great extent, *maximum* resistance exercises. Even such work as that of a basketball player with a medicine ball may habituate him in a slower, arm-and-body passing motion. What he would seem to need is speed training in wrist and finger flipping of the lighter basketball. It is rather common practice for the shot putter to do much of his out-of-season training with a shot weighing *less than* sixteen pounds. In fact, his form may suffer from use of the sixteen pound shot before he has developed adequate strength. He tends to do much of his *strength training* with lighter weights, in the practice for form perfection. In the above example of the basketball player, it is possible that he should confine his strength training to such weights as he can flip about with only wrist, finger, and forearm movements, if he is working on strength development for half-court passing. Because of the extreme necessity for speed, he probably should begin with light weights and rarely utilize for exercises maximum-resistance weights.

Summary. Strength is capacity of a muscle or group of muscles to exert force. It is best measured by pull against a dynamometer

or spring balance. Of course the pulls will differ in strength manifested, depending upon which muscle or group of muscles are functioning. Any individual tends to vary in rank as to his strength, depending on which of his muscles are tested.

Strength should not be confused with endurance (ability to persist at an activity) although there may be some relationship between strength and endurance at quite forceful activities. Neither should strength be confused with power. Power is the product of speed and force. Additional speed may compensate for less force in the expression of power by the athlete.

Strength exercises against great resistances and at slow rates may increase considerably the viscosity of the muscles, and slow up their rate of contraction. Such developmental exercises should be well mixed with stretching and speed exercises if the muscles are to be used in team sports. However, heavy muscles can be elastic and quick. There are noted examples among famous athletes of individuals with short, heavy, but highly explosive muscles.

Heredity, body build, training, and age all affect strength. *Apparent* strength is affected by skill in its application, by leverage and by individual motivation. Group studies show a positive correlation between size of muscle cross-section and strength scores, but some slim-muscled individuals are stronger and seem to have muscles of "better stuff."

A considerable amount of basic strength is essential for many sports and advantageous in most. However, strength without speed is less valuable. The rules of sports are sometimes adjusted to vary the emphasis on strength. This rule readjustment is especially useful in dealing with, and adjusting to, athletes of varying age groups.

Development of a well-muscled body may help the individual to attain greater self-confidence. The "weight-lifter" type of body does seem to fulfill some people's idea of masculine beauty; however, the social milieu of today gives greater rewards to strengths when they are combined with sports skills, athletic endurances, and speeds.

ENDURANCE

Midnight air is poison.

Endurance is a physiological condition manifested by the length of time one can persist at a particular activity. The activity may be a basketball game, a marathon run, a twenty-mile hike under full equipment, or many hours of laborious toil in a non-sports occupation. Endurance seems to be, to a great degree, specific to the type of activity. An athlete is not "in shape" for one sport just because he is "in shape" for another sport. The amount of transfer seems to be related to the similarity of movement patterns of the particular sports. Relatively specific types of endurance can be measured in terms of length of time one can perform a task of a given difficulty and complexity, under given conditions, at a given rate.

The physiological condition of high level of athletic endurance includes the storage of more food and the greater readiness of the body to make the food available. The blood becomes equipped to carry more oxygen and the muscles to take it over more rapidly. The stroke volume of the heart increases until perhaps six times as much blood flows through it per beat. The pulse rate may more than double in beats per minute. The capillary areas per unit of muscle increase through endurance training up to fifty per cent. Endurance seems to involve food storage and readiness, and chemical efficiency of blood and muscles to oxidize food products and to eliminate waste products.

Nature of great endurance. The physiological adjustments productive of high endurance performance are: (1) great increase in the capillary area in the muscles of the athletes, (2) considerable pressure from the strong heart pump and greater stroke-volume of blood flow, (3) extra hemoglobin (hence oxygen), (4) somewhat lower oxygen requirement per unit of work, (5) quicker response

of the temperature adjustment controls, and (6) quicker response of muscles to nerve stimuli. The great desire to win and the willingness to punish oneself are the psychological factors. Cureton lists also linear build, light bones, light body weight, and low body fat as typifying many athletes who excel in endurance sports.⁷

Endurance does not seem to be directly related to power of the muscles. Great increase in endurance frequently occurs without much increase in size of muscles. Smalley and Smalley report an experiment in which they found that endurance as measured by the Burpee test (the famous squat-thrust test of Armed Service measurements) depends very little on strength of arm- and shoulder-girdle muscles.⁸ Many so-called measures of cardiovascular efficiency seem little related to individual rank in performance of ordinary sports skills; on the other hand, in tests of cardiovascular "fitness" of distance runners or varsity crew athletes, considerable positive relationship has been found. Army tests showed a fairly high correlation between cardiovascular scores and ability to finish a twenty-three mile hike under full packs.

Endurance seems to be, to a high degree, specific to the type of training; or, in other words, different types of activities require quite diversified types of endurance. Cureton lists five types of endurance that he says "undoubtedly . . . have a large portion of uniqueness unto themselves," and adds ". . . specialized types of endurance specific to particular sports."⁹ He gives as reasons for breakdown in "all-out" athletic performance: the accumulation of heat, the lowered blood sugar, and an inadequate oxygen supply.¹⁰

Endurance seems to be so specific in nature that the coach should train his men for the specific type of endurance his style of game demands. The platoon system in modern football, and the relief pitchers in baseball have permitted the coaches and managers to train their men for, and work them at, a higher maximum level

⁷ Thomas Kirk Cureton, Frederick W. Kasch, John Brown, and W. G. Moss, *Physical Fitness Appraisal and Guidance*. St. Louis: C. V. Mosby Company, 1947. Page 424.

⁸ J. E. Smalley and M. A. Smalley, "Changes in Endurance and in Arm- and Shoulder-girdle Strength of College Women," *Research Quarterly*, 16:2. May, 1945. Page 146.

⁹ Cureton *et al.*, *ibid.*, page 53.

¹⁰ *Ibid.*, page 438.

of work output in a shorter time. The higher speeds are much more exhausting because mechanical efficiency decreases rapidly with speed. The "race-horse" game of basketball, and the "full-speed-on-every-play" platoon football require specific conditioning. In any sport in which frequent substitution is advantageous, the endurance training is based on the principle of greater output of energy per unit of time. It is evident that the coach using a careful ball-control system (soccer, lacrosse, basketball) will develop a different type of endurance from the coach who plans to stress speed and more speed. It is not necessarily correct, however, to say that an athlete trained to play sixty minutes of football has more endurance than an athlete trained in a platoon system. Probably neither type of endurance would fit the other athlete's style of play as adequately as it fits his own.

Endurance transfer. There seems to be a transfer of some amount of cardiorespiratory endurance in athletic activities that require long and arduous participation. Rowing, distance running, distance swimming, and the like, seem to be types of activities that condition to some degree for each other, and to some degree for other types of long-persisting athletic endurance.

In addition to this type of endurance transfer, or perhaps because of it, the boxer does a lot of road work. The baseball player, the football player, and the soccer player also run a great deal as a part of the conditioning exercise. It is an old statement in sports that "the athlete is only as good as his legs." Another slogan, not quite true, is that "running gets one in shape for any sport." However, many of the throwing, kicking, and striking acts of the various sports are dependent on a strong and enduring base. The feet and legs must be trained to endure without weakness or unsteadiness (due to fatigue) throughout the activity. Weight men in track have found it very valuable to do considerable running for conditioning purposes. The track coach wants his spring track men out for cross-country running in the fall. Football men customarily do a few laps around the field and a lot of "wind sprints."

The coach who does not have out-of-season practice in basketball wants his boys to go out for a fall or spring sport. The foot-

ball boys who do not have spring practice play lacrosse, baseball, or compete in track in the spring. The coaches urge them to do so. They feel that there is some fitness transfer from the other sports. In some high schools practice of basketball is forbidden until the close of football season. As a result of this regulation, the basketball team is often made up chiefly from the football players. They have strength and endurance transfers that place them ahead of the boys not competing in a fall sport.

Negative transfer. Participation in one sport may be harmful to an athlete's best efforts in another sport during the same season. Contact sports may stiffen and render more awkward the player of non-contact sports. Such an activity as swinging on the rings in the gymnasium may interfere temporarily with one's accuracy in basket shooting. Swimming is thought by some coaches to interfere with the performance of other sports skills by the same athlete during the same season.

Swimming muscles tend to be long and smooth, neither as bunched as those of weight lifters, nor as firm and hard as those of football linemen. There is even a trend, now, for diving coaches to be opposed to having their men engage in tumbling, and a vice versa opposition from the gymnastic coaches. The hypothesis is that in tumbling the body has to be braced for landing shock, whereas in diving it should be relaxed for entry into the water. The problem needs further experimentation. There are men who are excellent in both events, but whether they could win more consistently in one if they abandoned the other is yet a matter of opinion.

There are several possible factors in negative transfer. There may be less attention on improvement in each sport or some transfer of less suitable movement patterns from one sport to the other. Muscle tonus induced by the one sport may be less suitable for the other sport. This tonus change may be merely a matter of less relaxation in the antagonists to the other sport movements. There may be a soreness or stiffness of less-conditioned muscles. That the demands on the energy supplies are greatly increased seems evident. It is probable that the athlete can not mix two sports in the same season and reach as high a peak of efficiency in either one.

Age and endurance. Endurance seems to increase up to the post-pubescent level. The older high school athlete tends to be able to stand up longer under strenuous exertion. The age at which peak endurance can be reached seems to vary from sport to sport and from individual to individual. Champion marathon runners, wrestlers, and gymnasts tend to be older, on the average, than champions in the other sports. There is a general opinion in most professional sports that a man has his peak years between twenty-two and thirty. After the boxer, the baseball player, or the football player passes thirty years of age, the professional manager has his plans already made for a replacement to take over at almost any time.

Swimming is an endurance sport that seems to include many "teen-age" champions. Within recent years, the average age of the great swimmers has been decreasing rapidly. Some champions have been below senior high school age. Deutsch reported, in 1927, on thirty-seven great swimmers whose average age was twenty-eight.¹¹ Cureton, in his work published in 1947, lists eight recent champions whose average age is twenty-two years.¹²

It is probable that age beyond puberty is of some value in attaining peak endurance but that years of practice is a more important factor. Many modern athletes began their training when they were in the primary grades or earlier. Deutsch¹³ reports an average training period of 10.4 years for the swimmers mentioned in the preceding paragraph. It may well be that the decrease in average age of the champions is due, in part surely, to the earlier beginnings. The 1948 Olympic team of the United States did include some high school boys in other sports besides swimming. The first three places in the Boston Marathon (26 miles, 285 yards) of 1950, were won by Koreans of nineteen, twenty-one, and twenty-one years of age, respectively.

Attaining endurance. The extremely high levels of endurance of great athletes do not seem to be attained in weeks or months

¹¹ Felix Deutsch, Emil Kauf and Louis Warfield, *The Heart and Athletics*. St. Louis: C. V. Mosby Company, 1927. Pages 33-51.

¹² Cureton *et al.*, *op. cit.*, pages 102-105.

¹³ Deutsch, *loc. cit.*

of training, but in years. One hypothesis is that endurance development carried on during the growing years fosters a higher ultimate peak of attainment; the physiological process is guided by the training into "growing" a more enduring organism. The old hypothesis that young athletes may "burn themselves out" by hard work in the younger years does not seem to be corroborated by experimental evidence (see first part of Chapter 5).

Interest may be lost but peak achievement does not seem to be lowered by childhood competition. In addition to the loss of interest as an explanation of the old "burnt out" hypothesis, there is the very evident physiological fact that there are upper levels of physiological achievement. The boy who, after years of work, approaches his peak of running in, say, 4' 25" mile, may be a winner in high school. Unless he has physiological potentiality for greater development, he is unlikely to be a champion in college.

The evidence is very scanty on this whole subject of peak performance development. The last stated hypothesis above has two possible fallacies: (1) that there is a hereditary upper limit that is absolute and that it can be reached at the high school age, and (2) that the athlete is limited because of his best time in the mile. Endurance is to a great degree specific. The athlete may, assuming intense desire, succeed in college at different distances and in different events.

Brouha reported finding that approximately 3 per cent of the boys in the Armed Service training program at Harvard were unable to improve their (endurance) scores even though put through an intensive training program a second time.¹⁴ The motivation was apparently high, for failure to improve prevented Officer Candidate School qualification. Brouha reported that the boys were strongly motivated to succeed.

Steinhaus is of the opinion that great individual differences exist in individual tolerance for physical exertion. He says:

Individual variations in capacity for exercise are important. Some persons, even at early ages, react unfavorably to exercise through extreme exhaustion, breathlessness, and emotional de-

¹⁴ Lucien Brouha, Norman Fradd, and Beatrice Savage, "Studies in Physical Efficiency of College Students," *Research Quarterly*. 15:3. October, 1944.

pression. It is not wise to expect these persons to reach the same level of physical achievement as do those to whom exercise is an exhilarant and a stimulant.¹⁵

Exercise for endurance development should be gradually and carefully increased. Since the rate of increase should not be too rapid, the time span for development must be adequate. Six weeks seem to be a scanty minimum for sports that require considerable endurance, and six weeks are really only the beginning. An athlete is merely in shape to begin real work and perhaps try some competition. The peak of achievement will be approached in years. Most beginning athletes are unwilling to drive themselves hard enough. They should punish themselves, and then rest adequately, only to increase the output of effort after the rest. Cureton says:

Endurance is developed by hard and continuous exercise which exceeds the "steady" physiological state and produces near exhaustion for the time being. Considerable respiratory and muscular distress should develop. . . .

The fatigue symptoms which develop in this type of exercising are chest and throat congestion, muscle ache, loss of control, "stitch" in the side, loss of strength and power, sweating, facial distortion, tremor, faintness, nausea, and even blackout of consciousness. Upset stomachs are fairly common in untrained types.¹⁶

The assumption is that the athlete who is undertaking the strenuous training has been examined by physicians and pronounced sound. There is now a wealth of medical opinion opposing the old superstition that such strenuous exercise is dangerous to a normal heart. No evidence has been found for such claims. As to the seriousness of the above pains, nausea, and sickness described by Dr. Cureton, Dr. Jokl reports that the conditions are harmless and do not justify serious concern.¹⁷

¹⁵ Arthur Steinhilber *et al.*, "The Role of Exercise in Physical Fitness," *Journal of Health and Physical Education*. 14:6. June, 1943. Page 300.

¹⁶ Thomas K. Cureton, "The Physiology of Fitness," *The Scholastic Coach*. November, 1943. Page 11.

¹⁷ E. Jokl, "On Indisposition after Running" (Athlete's Sickness and Vasomotor Collapse), *Research Quarterly*. March, 1941. 12:3-11.

"Speed-play."¹⁸ The Swedish plan for training distance runners has seemed to be quite successful. It emphasizes a *long* period of training, repeated speed work over daily two-hour periods with interspersed periods of jogging and walking. It is a kind of sprint, jog, walk, and sprint again, cross-country jaunt. It continues for a long session. The American is a little confused by the Swedish idea that the athlete is not to get tired during the workout. Perhaps, if one begins this cross-country series of sprint relays young enough and continues them for years, he may eradicate the distress type of fatigue, even after repeated sprints for two hours. Perhaps, if he enjoyed the type of cross-country jaunt and the communion with nature, and if he were highly motivated toward future running achievement, he would be less conscious of any fatigue symptoms.

Four hypotheses have been advanced in recent years by champions of extra-endurance sports. The first is the one already mentioned of endurance training being best acquired through a rather extensive succession of sprints interspersed with easier running. The second hypothesis is that endurance is specific to the rate of speed for which one is trained. If one expects to run a 4' 10" mile, he must train at that speed over such distance as he can run that specific speed, even though because of exhaustion he has to run less distance than the mile in his earlier months (or years) of training. The hypothesis is that one trains for an endurance that is specific to a particular rate of speed. Change of speed finds the runner more fatigued because of less specific training. Runners report that this extra fatigue will set in because of a somewhat slower pace as well as because of a somewhat faster pace.¹⁹

A third hypothesis is that runners so trained can insert changes of pace in their distance running, changes that employ different movements and, to some degree, different muscle fibers. These changes of pace can be inserted when the runner feels extra fatigue

¹⁸ See the articles in *The Scholastic Coach* of February and March, 1950 (pages 7 ff. and pages 20 ff. respectively), by J. Kenneth Doherty, Track Coach at the University of Pennsylvania, describing the Swedish training regimens.

¹⁹ See article, "Viljo Heino," in *Scholastic Coach*, April, 1950, pages 11 ff., by Richard Ganslen.

and they may serve as a type of rest. The amount of benefit seems to be somewhat dependent on how radically the pace is changed. Some think the short sprint is the most restful pace to intersperse at these fatigued points.

The fourth hypothesis is that extreme endurance training should include much more (longer) work than what has been customary in America. About twenty miles of running per day is not uncommon in Europe. Emil Zatopek, the famous distance runner from Czechoslovakia, runs almost daily the whole year round, and uses much the same idea as the Swedes of sprints interspersed with jogging, but he works harder than most other runners. He often runs over twenty miles. As to the extent of his sprinting, his track coach says:

. . . During the past year, however, when he was concentrating on long distance work, Zatopek ran sixty 400 meter bursts ten days in a row.²⁰

Zatopek is an exception in the tremendous amount of work he does. It is doubtful if many athletes could profit by or endure such an arduous training schedule. That such "Spartan" training exists and that it has paid off in championships is evident. The members of the Japanese swimming team, who amazed the world in the National Swimming Championships at Los Angeles in the summer of 1949, are reported to work twice as long and as hard as American swimmers. An American long-distance champion, Forbes Norris, Jr., in writing about the Japanese training, says:

Few Americans go more than three or four miles in their daily workouts. The Japanese usually do twice as much, and sometimes more.²¹

He comments that they work four hours during the school year, two hours before breakfast and two hours from four to six in the afternoon. As to their summer training, Mr. Norris says:

²⁰ K. Kerssenbrock, "Emil Zatopek," *The Scholastic Coach*. April, 1950. Pages 10 ff.

²¹ Forbes H. Norris, Jr., "Flying Fish of Fujiyama," *The Reporter*. 7:5. Washington, D. C.: American Red Cross, 1949.

During this period they swim virtually all day—five to eight hours per day, six days per week. At the end of the season they take a brief lay-off, during which Furuhashi, for instance, will get up early and, for the sake of a little exercise, will run three to five miles every morning before breakfast.²²

Mr. Norris expresses the opinion that the Japanese swimmers probably use the sprint type of training. The similarity between the Japanese swimming regimens and that of European distance runners such as Zatopek is apparent.

Maintenance of endurance. When the American miler arrives at what he feels is correct condition for his best efforts in the mile, he is likely to work much less during the week (assuming one and possibly two hard, competitive races per week). This statement assumes long months and years of preliminary endurance training, however. It also assumes a grueling contest just often enough to keep him at his peak. The intervening days of rest give the body time to restore food reserves and eradicate all traces of fatigue.

Except for those mature champions trained to near-maximum energy output, some work seems desirable, even in season. The amount of work needed seems to be an individual matter. Some of the European champions have trained hard throughout the season, and have trained up to the day of each race without the usual preliminary day of rest. Body build and body weight are cues that some of the coaches use to indicate probable work amounts. The heavier built boy may do better with a little more work than is allotted the light, skinny boy. The athlete with some fat on his frame is not yet trained down to his best endurance level.

Types of endurances involving many more-forceful movements such as boxing, wrestling, or football have, by custom, insisted on more strenuous work between matches all through the season. However, there have been exceptions to this rule. It is possible that the shorter training period of schools never permits the average team to approach its best endurance level until the season is well along.

Experiments with animals have shown that intense work for

²² *Ibid.*

two months will increase the capillary area of the muscles up to 50 per cent, but that ninety days of complete rest *will cause complete loss* of all this extra capillary gain. It is rather evident that endurance is lost rapidly if one ceases to work at its maintenance. The athlete who stops his work entirely between seasons will have a long grind to get himself back in shape. It is perhaps because endurance is so temporary that athletic training has been turned into a twelve-month affair. The twelve-months athlete must have his times of less work and less intense competition, however. These periods will renew his enthusiasms, will permit experimental changes in form and technique, will allow for special developmental emphases if such seem desirable, or will permit time for delving into other types of enjoyable athletic competition.

As one's age advances, the effort necessary to "get back into shape" becomes greater and greater. The post-college athlete in America who lets himself lose his endurance fitness through months of easy living, or through demands of sedentary occupations, is unlikely ever to reach his former peak. Men seem to be able to continue severe endurance activities into their fifties if they keep healthy and active, but in the years after thirty-five, they seem to become much more susceptible to physical deterioration through overeating and inactivity. It would seem to be a professional obligation for the coach to preserve a high degree of athletic fitness as long as he is actively coaching.

Preservation of great endurance seems to demand greater attention to health habits. "Overload" work, the punishment necessary to raise oneself to higher levels of accomplishment, requires sound sleep and good food. Any sapping of energy to dissipate alcohol, or even mild poisons such as tobacco, makes the job of acquiring a maximum endurance level much harder. Long, restful hours of sleep are a *sine qua non* of extensive endurance training. The body must be really fatigued to cause the over-compensation that permits greater work the next time, but the body must have the rest, sleep, and good food to permit it to over-compensate.

"Good food" implies a normal, balanced diet. Hard work requires greater quantities of food, and carbohydrates seem to be the

most economical source of energy. The Japanese Olympic swimmers of 1932 and 1936 used a diet that is supposed to have aided them greatly in their success.²³ Dr. Cureton reports trying it out with his swimmers at Springfield College and finding it quite helpful to endurance attainment. The diet emphasized vitamin B₁. The swimmers ate baked fish, lean meat, beans (similar to our soy beans), bamboo shoots, a mineralized sea weed, rice, but no milk, cream, butter, or eggs. "Oysters and citrous fruits were eaten regularly and in considerable quantities. Tea and alkaline lime-water were the drinks, nothing else."²⁴

Warming-up. One well known value of the warming-up process in athletics is a reduction of the number of muscles that become injured (pulled) or sore from the activity. It is axiomatic that no baseball pitcher use his arm violently until he warms it up carefully.²⁵ The same principle is equally applicable to any muscles that are to be used so vigorously, but the principle is not so well followed in some activities. In spite of great precautions, pulled or strained muscles are not unusual in track, and plague many fall football training camps.

The warming-up process initiates a quicker relaxation of the antagonists to a movement, and thus makes them less likely to be strained. Warming-up reduces the viscosity of a muscle, its resistance to its own movement. In addition, the capillaries and veins are dilated, thereby taking away some of the resistance to blood flow and making the work of the heart easier. The hemoglobin becomes more dense per unit of blood and the transmission of oxygen is faster. The warmth generated from the exercise does more than increase the elasticity of the musculature. It speeds up the body chemistry processes of changing food to energy and resynthesizing the lactic acid.

²³ Cureton *et al.*, *op. cit.*, page 442; also T. K. Cureton, "Diet as Related to Success in Competitive Swimming," *Beach and Pool*. November, 1933, 7:335, and January, 1934, 8:10.

²⁴ Cureton *et al.*, *ibid.*

²⁵ Frank J. Wiechec, Trainer for the Philadelphia National League baseball club presents an excellent article on "Sore Arms" in *The Scholastic Coach* of April, 1950, pages 14 ff.

There seems to be great individual difference in the amount of warming-up exercise necessary. Such great runners as Nurmi and Cunningham were accustomed to run four or more miles as a preparatory procedure for a mile run. Many distance runners run until they are past the so-called "second wind" stage before the start of the race. There have been a few great distance men who warmed up very little. In team games such as basketball, for example, some boys seem to find ten minutes of preliminary work adequate to tone up their systems and put them in condition for violent exertion, most athletes want five or ten minutes more, and a few seem to need at least thirty minutes of rather vigorous exercise.

The theory is advanced by some coaches that extremely heavy muscles in an athlete make his warming-up take longer. There do seem to be boys of slight frame who need only ten minutes, and who seem to tire in the contest if given a longer preliminary exercise period. Build, however, is not a sure indication. Ray Conger was a tall, thin runner, yet he used an extensive warm-up for the mile run. Cunningham could not be said to have heavy legs, yet he warmed up very vigorously. The athlete of more advanced years tends to warm up more slowly and for a longer time. This fact may be due to greater need for a longer warming-up period, or it may be because an athlete tends to get "smarter" as he gets older.

Fatigue, defeat, and attitude change. The high levels of efficiency required of the modern successful athlete are reached only after years of practice. What the athlete can do now is due to his long, previous training. What he will do in the future depends on the past and what he is doing now. In the process of conditioning and skill acquirement, the performance of athletes in interschool competition may be inferior, the players inefficient. The coach may be working the boys very hard during mid-week practice sessions, but tapering off the work sufficiently before the game day. Team followers, hunting for an alibi for a lost game, hit upon "staleness" as the excuse. The boys may be glad to get an alibi, or, remembering their fatigue after hard practices, may believe

they are really stale. This mental attitude is a serious handicap to their future improvement if it cuts down the eagerness with which they try to learn. An individual boy who is not succeeding too well may be inclined to pity himself. He becomes very susceptible to alibi suggestion from the "hangers on" who like to talk to athletes.

Staleness. Actual physical and physiological staleness is rare among high school and college athletes, but it may occur. Inadequate sleep and rest after hard work, other bad health habits, or just overwork may cause staleness. The athlete keyed up for too long a time may drive himself beyond the state of normal fatigue. The strain and tension accompanying overexhaustion tends to prevent sound sleeping and normal relaxing. In the conscientious athlete, staleness symptoms are quicker fatigue, loss in skill and strength, worry, weight loss, loss of appetite, inability to sleep, and dread of practice. Even a type of illness may occur. Schneider and Karpovich say that staleness may result from (1) too much work, (2) too little exercise, (3) dissipation, (4) frequent and excessive emotional disturbances, or (5) repeated loss of sleep.²⁶ It is clear that some of these causes are not applicable to *conscientious* athletes.

The stale athlete tries to improve but seems to get worse. He seems unable to drive himself to do better, and driving methods by the coaching staff seem ineffective also. What he needs is more rest, more sleep, and more relaxation—not work. If he is allowed to attend practice, his work should be cut to an absolute minimum. It is usually better to keep him away from practice entirely until his energies and his enthusiasms return to normal.

Psychic staleness. Once in a while, an athlete will become stale through worry, tension, pressure of competition, fear of failure, or excess personal feeling of responsibility—in short, protracted emotional disturbance. He may show all the symptoms of sickness. He is not feigning sickness. He is temporarily ill, even if

²⁶ E. C. Schneider and P. V. Karpovich, *The Physiology of Muscular Activity*. Third edition. Philadelphia: W. B. Saunders Company, 1948. Page 235.

the causes are mental and emotional. He must be taught to worry less, to be less fearful about the outcome of the games, and to think about what specific things he is going to do in the game and how he is going to do them. Instead, he is probably thinking about all the things he may do wrong, all the mistakes he may make, and all the things he will fail to do. However, the first treatment he needs is to feel that the team will get along well enough without him, and to see that the whole success of the team, not a "life and death" matter anyway, does not rest on his shoulders.

Air temperature and pressure. Cold weather seems to make the problem of temperature adjustment for most efficient muscle function more difficult. The arms of baseball players, for example, are much more likely to get sore in cold weather. Extremely hot weather also exhausts the athlete sooner. Sharp changes in air pressure affect one's endurance adversely. A team traveling to Mexico City, for example, will find its endurance decreased unless it also comes from an area of high altitude (Mexico City is 7,500 feet above sea level). Some sections of Colorado also have sports arenas high enough in altitude to affect the performance of athletes from other parts of the country. The altitude problem consists of the presence of less pressure, and therefore less oxygen absorption, than the amount to which one is accustomed.

Summary. Endurance is a physiological condition manifested by the length of time one can persist at an activity. It is, to a great degree, specific to the type of activity, and specific to the rate of performance. Great endurance includes: (1) extensive increase in capillary irrigation of the muscles, (2) a stronger heart, (3) extra oxygen-carrying capacity of the blood, (4) extra food readiness for change to energy, (5) greater efficiency of conversion of oxygen and food to energy, (6) less oxygen need per unit of work, (7) quicker response of the muscles to stimuli, and (8) better temperature controls.

Endurance is not directly related to strength or power. One may be increased without much change in the other. Cardiovascular, or cardiorespiratory conditioning seems to be general enough

to allow some transfer from one long-duration type of athletic performance to a different type. As to age, the human seems to be able to attain levels of training permitting longer persistence after adolescence. In some sports, the complete maturity of twenty and more years seems to permit greater and longer persistence at "all-out" performance. Athletes beyond college age may achieve very high levels of endurance, but it is extremely difficult for older athletes to regain such endurance after inactivity and easy living have reduced them to unfitness.

The opinion that a physically sound high school athlete may "burn himself out" by intensive and extensive activities is not verified by careful investigation or endorsed by medical opinion. The *physically sound* young athlete may develop potentialities for higher final peaks by prolonged training during his developing years.

Maximum endurance is not developed in weeks or months but in years. The athlete must learn "to punish himself" in order to attain high levels. Long hours of work made up of many short, high-speed efforts interspersed with periods of milder activity seems to be the best endurance-training procedure. Plenty of sound sleep and the best of health habits are necessary if the individual is to "stand up under" and improve by the grueling work of extreme endurance training. Once maximum endurance is approached, the seasons' contests may furnish almost enough hard work to maintain it. However, endurance is lost rapidly if the athlete remains completely inactive for even a few months.

Warming up carefully is a necessary safety precaution and a means of prolonging endurance. The amount of time necessary for adequate warm-up seems to vary widely among individual athletes.

Staleness, characterized by loss of weight and appetite, apparent deterioration in skill, worry, dread of practice, and inability to sleep soundly, may occur. This condition may arise from: (1) hard work without suitable accompanying health habits, (2) repeated emotional disturbances accompanying the activity, or (3) too much work. Rest is the cure.

*Discussion Questions**Strength*

1. What is strength? What aspects besides strength appear in power?
2. What factors contribute to apparent strength, as contrasted with real strength?
3. To what extent is power related to size? To explosiveness of muscle?
4. To what extent are endurance and strength related? Speed and strength?
5. How important in athletics is an above-average rank in strength?
6. What relationship is there between throwing and striking movements, and leg strength?
7. What are the differences between the rules for Olympic wrestling, and the rules for college wrestling? Which emphasize strength? Explain.
8. What is the difference between "weight training" and "weight lifting"?
9. Does a person have strength in general, or may he be strong in some muscles and weak in other muscles? Is there a general factor of strength?
10. Do heavy strength exercises increase the viscosity of the muscles? Has viscosity any relation to speed?
11. Is extremely heavy work during the summer good training and conditioning for a fall sport?
12. Is there such a thing as becoming "muscle-bound"?
13. May muscles of the same size vary in strength? Assuming the same size of cross-section, does age or sex affect degree of strength?
14. How do limb length and mechanics of movement affect apparent strength?
15. Can one become stronger by being more intensely motivated?
16. Suggest the best practices for strength development, when needed, in high school athletes. What is the objection to the practice of having basketball players practice passing with a medicine ball?
17. How is strength best measured?
18. What is the relationship between strength development and personal appearance?

Endurance

1. What is endurance? What physiological changes accompany a high development of it?
2. To what extent is endurance transferred from sport to sport?
3. Is endurance specific to a particular rate of performance?
4. What types of athletic performance show highest relationship with cardiovascular measures?
5. To what extent is endurance specific to the style of offense and defense used?
6. Should the high school athlete attempt to achieve greatness in more than one sport? The college athlete? The professional athlete?
7. Is there any negative transfer from sport to sport; in other words, may an athlete be less efficient in one sport because he is also playing, or has just completed a season, in another sport?
8. What is the relationship of age to endurance? How do you explain the gradual decrease in age of attaining championships, during the last ten or twenty years?
9. Do great high school athletes tend "to burn themselves out"?
10. How long does it take the average person to build up to his maximum athletic endurance in distance swimming or running?
11. How do you explain the apparent fact that the average European or Japanese distance man works so much longer than the average American athlete in the same sports?
12. Are there some individuals who can not attain even medium-high levels of endurance in athletics regardless of time and effort?
13. Is the "punishing" nature of maximum endurance training likely to affect an athlete's health adversely?
14. What is the Swedish regimen for training distance runners?
15. Assuming the hypothesis to be correct that endurance is specific to pace, explain how you would train a miler.
16. Can one become more fatigued by running a little slower than his accustomed pace?
17. Can you offer any explanation of the possible restful effect of a sharp change in pace in the midst of a race, even though the change involves a faster rate of running?
18. Does maintenance of endurance peak require much additional work during the competitive season?

19. How soon may one lose his physiological conditioning if he stops all vigorous exercise?
20. What is the relationship of mature years to length of time necessary to recover fitness, once it is lost?
21. How much should the average person increase his sleeping hours if he undertakes a period of long, grueling endurance training? His diet?
22. What is the relationship of the warm-up to length of endurance?
23. Should one warm up to the stage of "second wind"?
24. There seem to be pseudo-staleness, psychic staleness, and physiological staleness. Explain.

Test Questions

Strength

1. Are strength and power synonymous terms?
2. Are strength and endurance highly correlated?
3. Is strength more important in Olympic wrestling than in college wrestling?
4. Is weight lifting a commonly advocated method of training for most sports? (Is it a method advocated by coaches?)
5. Is strength a general factor that pervades the whole musculature in approximately the same relative amount?
6. Do heavy strength exercises tend to increase the viscosity of the muscles, and thus make one a little slower?
7. May muscular development for one sport decrease one's efficiency in another sport?
8. Do muscles of the same size always possess the same degree of strength?
9. Does one's strength increase with intense motivation?
10. Is strength best measured by ability to persist at an activity?

Endurance

1. Is endurance general enough so that it transfers to a great degree from sport to sport?
2. Is rank in endurance independent of rate of performance?
3. Is performance rank in team-sport skills highly correlated with cardiovascular endurance?
4. Is age well beyond twenty years essential for championship in great endurance feats such as the Marathon, or long distance swimming?

5. Is great endurance development a matter of *years* of training?
6. Are the European and the Japanese distance running and distance swimming champions better hereditary specimens than are available among American athletes?
7. Is amount of possible endurance development partially dependent on hereditary factors?
8. Is it unwise for the athlete to persist in activity after he feels distress from fatigue?
9. Is endurance for mile running best developed by an extensive series of practices in which rates of running are gradually increased?
10. In general, does maintenance of endurance peak, once it is attained, require much additional work during the competitive season (between weekly contests)?
11. Is there a tendency for a longer warm-up to increase endurance?
12. Is psychic staleness merely a loss of interest?

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10

Form

It is a skill surmounting difficulty, and beauty triumphing over skill. It seems as if the difficulty, once mastered, naturally resolved itself into ease and grace, and as if, to be overcome at all, it must be overcome without an effort.

WILLIAM HAZLITT, from *Indian Jugglers*.

Form is a way of doing, a work method. It is a design or pattern of performance. Efficient form is the way that is best adapted to accomplishing the purpose of the performance. The purpose may be beauty, grace, and apparent ease as in gymnastics, diving, or figure skating. It may be success in terms of a higher score as in a team game, faster time as in track, or better placed blows as in boxing.

The coach and the player may have different purposes in determining the form to adopt. The coach may want the boy to use the form most likely to score a goal but the boy may want to use the form most likely to impress others—some spectacular form. Boys have been known to dribble a basketball to the corner of the court for a one-hand "hook-shot" when a closer and easier shot was possible. The baseball coach sometimes wants the boy to try only for a safe hit but the boy wants to knock the ball out of the park. There is also the boy who wants to catch every ball with only one hand because the act is more spectacular.

Economy of motion. "Good form" is supposed to achieve best results with a minimum of lost motion and a minimum of wasted energy. Form may be adjusted to be more economical of motion

and energy either because of the necessity to endure longer in the activity in order to win, or to save one's none-too-great supplies of energy. The older athlete tends to become more conscious of this latter aspect of form—form as a means of energy conservation. The young pitcher may use a windmill wind-up that adds no speed, wastes much energy, and fools no batter. The young boxer may dance and jump all about the ring to no purpose, wasting energy that he will need in later rounds. The beginning runner bounces up and down on his run whereas the skilled runner may have less than an inch of rise and fall of his center of gravity.

The great athlete saves energy because his extra skill makes each motion more effective, he makes fewer needless motions, and his conditioned body uses less energy per movement. There are many ways to save energy in sports. In swimming, for example, the swimmer keeps the body as straight and as flat as possible to cut down friction. Angles are avoided. The arm recovery on the crawl is made entirely out of water to cut down the resistance. In throwing, the player uses longer arcs, when fitting, to make attainment of higher momentum more easy. In tennis, the player places the ball in his opponent's court so that the angle of return is reduced, and thereby saves himself many steps. In the weight events in track, the athlete keeps to a straight line across the circle and to ground-skimming steps so that *all* momentum will be exerted in the effective direction. Energy saved by sound mechanics of form can be utilized in the longer persistence or the more forceful expression of the skill.

It is evident that economy of energy is often synonymous with sound mechanics of form. However, what is suitable form for one athlete to use may be impractical for another. The "figure 4" in wrestling is of little worth as an offensive weapon of the short-legged wrestler. The tall tennis player can rely to a greater extent on the volley and the overhead smash. The long-limbed basketball player can shoot with mere wrist and finger flips. The 6 foot 9 inch player needs much less force against gravity to flick the ball to the basket when it is at arm's length above his head. This is a favorite shot of George Mikan, one of the greatest players of all

time. He saves energy in more ways than one by utilizing this form. His high release makes less effort necessary to avoid a defensive man.

Learning problems. By the time a boy comes under the direction of a coach, he has already learned to make almost any individual movement. He made almost all known individual movements when he was still an infant squirming ceaselessly around in his crib. Strengths, speeds, and endurances will improve, and to acquire athletic skill, he must learn to reorganize individual movements into performance patterns. This learning is not a simple thing. The youngster does not know which movements to select, how many to include in the act, or how to put them together. Some of these movements will need to be carried on simultaneously, some only partially overlap, and some are sequential. In such a basic skill as throwing or hitting, the athlete must learn to turn sideways in preparation for a weight-shift, widen his base, shift weight as a leading but overlapping complement of the arm movements, readjust the arm extension continually during the act so that the arc of throw or swing is flattened, insert the wrist snap, and so on. After years of practice, pitchers still get sore arms and batters get batting slumps without understanding what details of movement caused the unexpected loss in efficiency.

One of the harder learning problems is that of dissociating arm movement from body movement in the action of team games. The athlete may need to throw accurately on the run even when the body momentum is not directed in the throwing direction. At times he must remove, by adjusting arm rate of movement, some of the momentum contributed by the total body movement. The fast-breaking basketball player must take part of his running momentum out of the ball on his try for goal. The ball handlers in football on double and triple reverses must take into account two momentums from opposite directions. The ball must be robbed of the runner's forward momentum as it is handed to a teammate running in the reverse direction, or a fumble may occur.

One of the difficult problems of form is the variation in force and speed essential for the various movement parts of a skill pattern.

The tennis server tosses the ball upward lightly with one arm and hand while he swings the racket forcefully with the other arm and hand. A better example might be the use of what looks to be the same movement pattern by a pitcher for throwing both his fast and his change-of-pace ball. There is an adjustment of released and inhibited movement in the delivery of the slower ball that is harder because of the necessity of concealing any such adjustment.

Timing. Timing of the several movements of a pattern is one of the hardest parts of a skill to adjust for greatest effectiveness. The wrist-snap ends many throwing and striking movements and is most effective only at last instant of contact. It contributes the final culmination of acceleration, adds the final bit of accuracy guidance, or puts the final bit of effective spin on the ball. At the beginning of the act of throwing or striking, the knee and ankle extensions tend to flow together in initiating the momentum. They begin movement before the trunk rotation, and the trunk rotation precedes the arm swing. Each muscle is stretched a little, before its contraction, to increase its efficiency, yet if speed is wanted no bit of momentum must begin to diminish before the next movement is added. Each movement should increase the acceleration. When less momentum is desired, fewer movements, shorter movements, or less forceful movements may be used, but if the game demands deception, hence great similarity in pattern in spite of less momentum, the original movements will be made accompanied by considerable revision in the tension of the antagonistic muscles.

Form as mechanics. The physical principles of lever use, of lines of force (direction in projection), of pendulum swing, and of inertia and momentum determine effective forms. In the high hurdles, for example, a regular stride, a minimum of vertical lift, a proper body slant over the hurdle, and a bent front knee with a foot snapped down are all applications of mechanical principles. Minimum lift conserves energy and saves time. Forward body-slant after clearance of front foot makes it possible to bring that foot down quicker and also permits closer clearance by the back leg. The quicker contact with the ground by the snapped-down,

front foot makes it possible to add additional push before the "float" over the hurdle has killed too much momentum. The straight line across the shot put ring with a ground-skimming by the propelling foot and an elbow directly behind the shot on its line of flight, are other examples of physical principles of most effective force application.

Achievement of most effective line of direction of force application is a basic part of perfection of form. The *longer* last stride of the high jumper and the *shorter* last stride of the broad jumper are devices to change momentum into the desired direction. The high jumper sinks into, bounces, and springs off a front extended leg that redirects his momentum into a vertical direction. The flinging upward of the arms and other foot are part of the change of direction pattern. The broad jumper does a last-stride bounce off a "slapped-down" foot but the last stride is shortened so that the spring is only slightly upward. Here again the arms and other-leg forward-thrust help in force direction.

The forty-five (or greater) degree angle of release of the javelin so that its heavy nose will not come down too soon as contrasted with the thirty degree angle of release of the discus, with its gyroscopic effect to preserve direction, are other examples of application of mechanical principles. The fifteen degree slant of the body of the average distance runner as contrasted with the twenty-five degree slant of the sprinter is another example of gravity and balance adjustment. Even the little technique of runners of shortening the stride suddenly on one step, in order to speed up, is simple mechanics. The one short stride throws the center of gravity farther forward into the phasic posture for sprinting.

Outfielders are taught to turn around in order to run after a long-hit baseball instead of running backward or sideways. Pitchers take a backward stretch and backward extension of the throwing arm, then a long step, all to increase the length of the arc of throwing. Discus and hammer throwers spin the body, as a preliminary part of the throwing movement, so that the throwing act is added to already acquired momentum. The catcher often fields a bunt along the third-base line with a complete body turn for his

throw to first rather than the slower procedure of picking up the ball, checking momentum, drawing back the arm, and throwing. The old physics principle of force being equal to mass times acceleration merely means to the boxer that he must get his weight behind his punches.

Deception. Form in team games must often be adjusted in order to conceal intent from opponents. The pitcher's similarity of delivery form for his slow and his fast ball has already been mentioned. He keeps the ball hidden from the batter (with the glove and the body) until the last instant of release. The pitcher varies his timing of his pitching so that the base runner can not depend on a set rhythm and thereby get a quicker start in base stealing. Every school boy changes his pitching form when a man gets on base. If the batter can conceal his intent, he may catch a deep-playing third baseman with a bunt.

This same principle applies in basketball where the player tries to shoot or pass from the same approximate position to conceal his purpose from the defense. Wrist-flick passes are of great advantage, because of absence of preliminary evidence of intention, in hockey, lacrosse, or basketball. The tennis player shortens his backswing to conceal the direction of his stroke. The badminton player executes his variety of serves with the same backswing. Indiscernible wrist and finger twists are common devices to put deceptive placement or spin on a ball whether it be handball, squash, tennis, or baseball.

Effect of form adopted on its use. The form adopted may affect the frequency of opportunity for its use. The wrist-flicks just mentioned illustrate another principle of form: Some types of form permit more frequent utilization of the skill than other forms, for the same act. Opportunity for the one-handed shot in basketball occurs more frequently than does opportunity for use of the two-handed shot. In general, the one-handed shot can be released from a position more difficult for defensive covering. In boxing, the left-jab specialist may score many times, or at least keep his opponent away by a left in his face.

Ambidexterity, discussed later in the chapter, permits openings

not available to the athlete limited to use of one arm or leg for effective form. Buff Donelli frequently received the football from his position in the "T" formation right behind the center, then quick-kicked, using either foot. Jump-passers in football, and jump- or fade-away-shooters in basketball illustrate forms that, if developed to adequate accuracy, permit usage when more conventional forms would be impossible.

Beauty in form. The sports in which appearance contributes to winning make necessary some focus of attention on what aspects of form are pleasing to the eye. Principles of beauty in sports differ very little from principles of beauty in art or architecture. Streamlining, planing, long, slow curves, no sudden breaks, no jerks, and no sharp angles, are some of the verbal cues given to those aiming at beauty of motion. The gymnastic coach emphasizes having the legs straight and together and the toes pointed. About all a diver would have to do to lose on an otherwise well-executed dive would be to let his buttocks protrude rearward as he springs from the board. The diver avoids "bumps" and angles. He stresses length and straight lines or long, slow curves. When he tucks, he flexes his head and back-line into a continuous, smooth curve, for both mechanical and beauty reasons. As he finishes the tuck, he glides into the straight lines again. These same principles are in evidence in the tumbler and the gymnast.

The figure skater must "flow through" his movements. Any evidence of jerkiness or of effort to preserve balance counts against him. The training for concealing a slight error in either a gymnastic routine or a free-skating move is to have the unintentional variation flow into an appropriate continuity as if it were all part of the total plan. The gymnast or skater merely draws on his repertoire for a variation that permits continuity and *seeming* unity to conceal the slight lapse in perfection. Never does he permit himself to reveal by his face or tensed musculature "forced" movements or signs of difficulty.

Along with this emphasis on *apparent* ease is developing an increased emphasis on long movements, pendular swinging, and continuity, especially in gymnastics. The older, traditional poses em-

phasizing still-posture and strength are becoming less evident. Mere show of strength is not likely to score points in gymnastics, especially if the act creates the impression on the observer that great force is being exerted. Power acts are becoming less and less evident. Even the still positions are becoming mere pauses to accentuate the preceding and following continuities.

Wettstone says:

Calisthenic exercises that have action and keep moving not necessarily with tumbling but with leaps, turnovers and rhythmic movements have a better reaction with the judges and audience than strictly heavy strength routines. That does not mean a routine must be without a press or a stationary lever, but it does mean that splits and similar movements need not be posed but could be just as finely appreciated when they are part of a flowing sequence, not a climax to a group of three or four body movements.¹

It is true that beautiful effects are gotten by building up to a climax only to stop on the instant, if stop brings surprise, a lingering memory of beautiful pattern, and if the stop reveals no evidence of the effort to attain it. Such seemingly instantaneous pauses are valuable only for emphasis. They should not be held too long unless they are the termination—an effect like that of the orchestra leader utilizing the crescendo with its abrupt ceasing, for his finale.

In general, to conceal evidence of effort and to make the continuity seem easy, pendular movements and great body flexibility are stressed. The body must be able to swing on its joint pivots easily, flexibly, and without any evidence of stiffness, strain, or sudden inhibition.

Beauty in balance-movements seems greater in asymmetrical forms in which the parts divided by the center of balance are quite different—so different that the balance problem challenges the attention. The great gymnast on the sidehorse presents a gradual, body-length curve, concave from the top of his head to his pointed toes, swinging about his interchanging arm pivots without the angle

¹ Eugene Wettstone, "Five Thousand Judges at a Gymnastic Championship," *Gymnastic Yearbook of the Amateur Athletic Union of the United States*. New York, 1950. Page 17.

at the hips ever decreasing to ninety degrees. These routines emphasizing swinging of the body through the horizontal plane are more challenging with their asymmetry of balance than the commonplace symmetrical postures of longitudinal positions. The radial balance in the tuck of the tumbler or diver takes its beauty from the change of tempo and the emphasis it throws on the progression from long to short, and then to long lines. In general, longer lines and more size are more impressive.

A routine should have a central "whole" around which the rest of the continuity is background. The artistry of the background is as important as that of the central theme. The background fuses, blends, and gives a total effect of unity and simplicity. The principles of art are the same everywhere. Woman's dress becomes a "creation" when the perfection of detail is so great that it is seen as a total ensemble. Some sports have traditional central themes, like, for example, the "school figures" in skating. The champion expresses individuality through his own designs to supplement his interpretation of these universal patterns. The individual's progression patterns should be built around his individual build and special skills *in terms of appearance*. They should center around a phasic unit of emphasis for which the rest of the continuity is only background. One of the greatest of the 1948 Olympic gymnasts, an architect, is supposed to have designed and drawn out on paper his continuities before he turned them into personal action patterns on the apparatus.

Too complex a routine, "too much stuff," detracts from beauty. There is so much going on that the observer fails to see (or feel) ease, repetition, blending, progression, and rhythm. Moreover, beauty lies somewhat in simplicity of rhythmical progression up to a central emphasis, and then rhythmical progression back to simplicity. Wettstone asks:

Is the work on the parallel bars beautiful work or is it just a jumbled mess of difficult movements? The audience wants clean graceful work that is fluent.²

² Wettstone, *ibid.*, page 18.

Preparatory postures. Basic to most movement patterns is a preparatory posture. Proper preparatory footwork makes direct lines of force possible, makes the initiation of movement easier, and increases the possible range of motion. The pattern of bent knees, crouched trunk, forward center of gravity, and partially flexed arms has already been mentioned as characteristic of "readiness" in many sports. Static postures as preparatory stances for stability and steadiness often include straight knees, a shoulder-width foot-spread with toes turned somewhat outward, and a straight back. Archery presents an example of relatively wide foot stance. In the static posture for rifle shooting, the feet are brought closer together than in archery because stability is less of a problem and because the narrower foot-position is a little more relaxing.

Some sports require special training for still posture. The baseball pitcher's stance on the rubber is an example. The front foot (right for the right-hander) against the rubber and the other to the rear is the popular stance when no runner is on base. When a runner is on base, the stance is changed to place the left foot ahead of the rubber (right-handed pitcher). The "step-off" to throw to a base merely involves a back step with the right foot so as to straddle the rubber. The balk rules make specific stance training necessary.

Some golf teachers devote a lot of attention to stance. The feet are usually about shoulder width with the ball approximately even with the left foot (driving). Usually the feet are parallel but a few variations from open to closed stance have occurred among the great golfers.

Other stances have been mentioned earlier like the crouch with the high hips ("the bullet start") in track and the somewhat similar stance in football. In most sports the readiness position is likely to involve a preparatory position while moving (a phasic stance). Frequently the tennis player must move into his position to hit the ball and be prepared to stroke while moving. Accompanying his movement to the suitable position is a body postural adjustment which, on stroking, places him sideways to the net with his racket back for the swing. Adequate distance from the ball for an ex-

tended arm swing is helpful. Accuracy seems to be aided if the racket head is kept above the wrist, and the knees are bent to permit this racket position when stroking a low ball.

In acts like golf driving, baseball batting, tennis service, and shot putting, the throwing or striking act occurs over a front leg that is straightened. This statement does not include the follow-through after the ball is projected or the reversal for balance in the shot put. The purpose of the extended front leg is to give a rigid base to this radius over which accuracy may be adjusted, and into which no force is dissipated because of loose fulcrum. In the striking acts like golf driving or baseball batting, the attempt is made to keep the individual's head as still as possible during the act. Certainly no up-and-down motion is permitted. Any head movement may affect the accuracy of the perception and the steadiness of the swing.

Sports events requiring great expenditure of force are likely to be best performed with a straight back (trunk). Weight lifting is one example, and shot putting is another. Although the football fullback has a marked forward slant as he bucks the line, he tries to keep his back from being curved as he hits the would-be tacklers. The blockers also slant the trunk toward the opponent, but hit with the back as straight as possible. A flexed back and forward head present less rigidity for hitting, and may result in injury to the blocker from the impact. The force of the collision may flex his vertebrae or neck beyond anatomical limits.

Many of the preparatory postures of skills performed while the athlete is running involve change of base of support in width, change of body slant, and change of position of center of gravity with regard to the base of support. Body slants in running and change in them to prepare for change in speed have been mentioned. Quick change of direction is another act involving preparatory phasic stance. A *longer* front step is suddenly interposed, the weight of the body is thrown a little more to the rear and to the inside of the angle to be taken, and the center of gravity is lowered. The principle is the same for any *quick* stop or change of direction: a long, front step with the weight held toward the rear, and a sudden lowering of the center of gravity of the body. A pivot on the

front foot and a step off in a new direction by the rear foot initiate reverse or direction change. Shorter strides, more lateral width between the feet when running, knees never completely extended, and gliding steps, all permit quicker stop or quicker change of direction.

Balance, steadiness, and relaxation. Balance in athletics is the control of one's center of gravity plus the control and utilization of body slants and of unstable equilibrium, hence gravity pull, to facilitate movement. One student defined balance in athletic sports as "being able to throw one's center of gravity beyond the base of support, chase it, and never let it get away." Steadiness refers to the amount of bodily sway. Sway may be caused by too small a base, too much weight to support for the individual's relative strength, fatigue in the muscles of the base of support (tired legs, for example), or over-tension, and therefore alternating and somewhat unbalanced contractions of the muscles supporting the particular posture.

The short step, the glide as contrasted with the hop or cross-step, the wider base, the lower center of gravity, the toed-out foot-position, all are devices to keep the center of gravity under more precise control. Body slants in a preparatory position are counterbalanced with extended arm, leg, or both. The shot putter places the shot a little farther back than a vertical line would extend directly above his back foot. The weight of the shot and the longer resistance arm after the lean help balance his extended left leg (left, if he is a right-hander), help stretch his muscles, decrease the angle between the right thigh and the trunk, and make the arc across the circle as long as possible. The baseball pitcher may take a similar type of backward lean over his thigh, with the throwing arm to the rear and the front leg extended toward the batter. Beginning pitchers have difficulty with their balance, hence with their control, if they exaggerate this arc-of-throw length.

Relaxation refers to degree of tension of the musculature. The rule in sports is to try to have no more tension in the acting muscles than is necessary to perform the act; and to have as low a degree of tension in the antagonists to the contracting muscles as possible and still maintain any necessary inhibitory control. A lower degree of

tension in the acting muscles means less energy usage. It is evident that tense antagonistic muscles, opposing those acting, would cause the athlete to waste energy in working against himself. Moreover, precision and exactness in skill performance are upset by stiffness or resistance to the movement. Fine movement-adjustments are best made when no great force is involved.

The athlete acquires as a part of his form a suitable degree of muscular tonus. He learns not to be too tense or too stiff lest he fumble the ball. When he finds himself "tightening up," he forces himself to relax. Often he wiggles his hands, his body, his bat or golf club as a means of loosening his tensions. Clair Bee used to have his boys "jiggle" the ball with the wrists and fingers as a preliminary bit of relaxation before trying a long-shot during a game of basketball.

The distance runner will relax his fingers, making sure that they are not clenched. Sometimes these runners even let their arms swing down loosely for a moment to "shake out the tension." The "coast" of the runner after he attains his desired speed is a type of more-relaxed running. The swimmer may relax on a glide between strokes. The skier relaxes his legs and trunk so that he can adjust to uneven surfaces. Any jumper learns to relax on his landing. Relaxing is almost essential to prevention of injury in the frequent falls of team games. The catching skill requires a relaxation, a "give" to the arms and hands. Moreover, this relaxing type of reception flows into and facilitates the succeeding, throwing act of the athlete.

When the bones and joints can be used for supports and fulcrums, without much additional muscular force being necessary, relaxation is greater. This principle is applied in the straight back and the pendular arm-swing of the foul shooter. The bowler also uses a straight back and a pendular swing to release the ball; so does the golfer, although his back tends to have a little more flexion. Perhaps the straight back and the dependence on bony framework for support (hence relaxation) is most pronounced in the rifle marksman. He even eases into his hand squeeze on the trigger so mildly

that he is never sure when the gun will go off. His attention is on his target.

Attention. The direction of attention during skill-pattern performance is an aspect of form. The tennis player, the golfer, and the baseball batter keep their eyes on the ball. The hockey player focuses on the goal after his stick makes contact with the puck. The baseball pitcher looks at the target set by the catcher with his glove, or at the first baseman's right knee on a peg to first. The basketball player, when shooting long shots, focuses either on the rim of the basket or at a spot on the backboard, if he is shooting from a side angle. The defensive player focuses primarily on his man in man-for-man defense and primarily on the ball in zone defense. The dribbler in basketball or soccer diffuses his attention over the offensive area ahead and to the sides. The dash man, and the football lineman on offense, focus on the motor act of starting. The hockey player, lacrosse player, or soccer player, when trying for a goal must focus on the empty spaces, not on the goalie. The pitcher focuses on the catcher's glove. If, after starting his throwing act, he glances toward the waving and shouting runner on the third base line, his accuracy is likely to be upset. The track runner preserves better balance if he looks many feet out ahead. Even the jumper on landing helps his balance by looking well beyond the landing spot.

One of the harder problems in teaching beginners is to get the attention correctly directed. The beginner in striking skills, characteristic of games like tennis, baseball, handball, and so on, tends to look at the ball as it approaches but fails to have his body turned adequately so that the ball can be seen up to the instant of contact. If the body is facing frontward too much, the ball moves out of the visual area in the last foot or two. In golf, the novice may tend to raise his head and look along the line of "hoped for" flight as he swings. Even in billiards, the *champion* has his eye focus on the cue ball when he hits it. A head position of focus on the object to be hit is a fundamental part of early form learning.

Diffused vision and extensive attention to cues from peripheral

vision necessitate a head position a little more erect than the beginner wants to use when he dribbles a ball. One device to use in teaching this "field" vision is to widen the base and crouch a little more so that the bouncing ball has more chance to appear in the area of peripheral vision. This technique is better in basketball than in soccer. In soccer, change of base may affect the dribbling skill. There seems to be no real substitute for practice in enough of the game situation to permit "dribbling-by" situations plus a switching of men and an advantageous "pass-off" situation. This attention diffusion of the soccer and basketball players would be entirely wrong in some other games; for example, the baseball infielder who tries to pay some attention to the runners on base while he is in the act of fielding a grounder generally muffs the ball. He must know the runner situation in advance so that he can concentrate on the ball.

Examples of attention difficulties could be multiplied innumera-ly. Attention seems to be a fluctuating, ebbing, and increasing phenomenon. The batter can bring his attention up to a peak but it starts to wane if the pitcher delays too long. The defense against such pitching technique is to step out of the batter's box for a pause, and then start all over again. Experiments with peak of attention of a dash man after getting the "Get set!" signal indicate that peak of attention for fastest response comes in about a second and a half. *Much less* or *much more* time (as measured in tenths of a second) elapsing before the gun report results in slower starting time by the runner.

Opponents use many devices in team games to distract attention or to catch an opponent at a lower level of attention. The boxer feints his opponent into attending to the wrong defensive move. The pitcher often plays the delaying game with the batter. The offensive player in basketball uses feints with and without the ball to distract attention. He also feigns relaxation to induce real relaxation and less alertness by his opponent. Change in length of pause before the starting signal in football, plays without any signals, fake spinners, double and triple passes behind the line, lateral

passes, and the like, are all based on focusing the attention of the opponents where it will be less effective. Even in track a runner may feign fatigue only to surprise his opponent with a burst of speed near the end of the race.

One principle of attention focus is characteristic of all successful form-patterns. That is the aspect of focus of attention on cues for actions, and on results as cues for further actions. The form is not ready for game performance until its specific movements and movement integration can be turned over "to the automatism of habit." Attention is focused specifically on a ball, not on the *motions* of hitting or catching the ball. The latter must be habit action. It is difficult enough to perceive curves, bad bounces, high hops, and the like, even when total attention is on the ball. Besides, consciously directed, detailed movements are performed more slowly than are the same movements as responses to habits. The habit response is the only one fast enough to suit game conditions.

Much early skill acquirement is devoted to establishing habit performance so that attention can be directed where it is most effective: to the successive cues to action continually revealing themselves in the panorama of game development.

Individuality in form. A form-habit requires long practice of the special movement-patterns. What form should the prospective athlete select? If he tries to imitate others, he will adopt a form limited by those examples that he sees. Examples of geographical variations in form have occurred many times. Years ago the Finns came out with their own version of how to throw the javelin. After they defeated the rest of the world's athletes, the other nations' athletes adjusted the form they used to take advantage of the better points of the Finnish style. The western part of the United States had universally adopted the one-handed, medium-distance shot in basketball long before it was accepted in the East. American form in tennis has stressed the use of only one hand on a tennis racket for stroking, but many Australians have used two hands. Three great two-handed players have played at Wimbledon. In America we have Pancho Segura using two hands on his forehand

stroke, but he was a great tennis player before he came to the United States. The superb speed and accuracy of Segura's two-handed drive has contributed a great deal to his eminence in tennis.

The wide divergence in form in baseball batting is common knowledge. The high step of Mel Ott, the wide step away by the front foot of Al Simmons, the short grip and spread hands of Ty Cobb, the long, golfing swing of Babe Ruth, and the step *at the ball* by Rogers Hornsby, are baseball lore. Great pitchers have varied even more in the form of their delivery. Even the detailed play-techniques of the game are performed with great individual variations; for example, some professionals cross second base on the double-play while others touch it and step back outside the base-path for the throw to first base.

The contrasts in individual form could be illustrated from any sport. Once in a while a basketball player arrives at college with a form that is very unique, but also very successful. It is often a form that the coach would not teach, and perhaps could not teach in the time he has to train the boys. But the "freak shot" is accepted if successful without any attempt to change the athlete's peculiar form. Many such scorers go on to professional teams and achieve great success. Joe Fulks of the Philadelphia Warriors is a good example of uncanny shooting with a highly individual form, or rather a highly individual variety of forms.

Once in a while some highly successful form is developed by a boy working long hours without any formal coaching. He discovers, perhaps by accident, techniques that succeed, and practices and perfects them. Form variations are frequently developed by successful athletes who performed in a more orthodox manner at their early stages. After reaching the expert stages, they begin to experiment with individual variations that may be mechanically sound for general use, or that may fit more specifically their own peculiar type of build, speed, endurance, strength, and so on. In general, it is these experienced, mature athletes who have contributed most toward new developments in form.

In addition to the athletes themselves, there is a great body of former athletes engaged in the coaching profession. These men

have collected innumerable records of procedures and results. They have applied the laws of physics to refinements in form. They have utilized the high-speed movie for form analyses. Through their clinics, their writing, and their personal exchanges, they have pooled their knowledge into a kind of team research on coaching. This accumulation of knowledge and mutual exchange is resulting in constantly greater achievement, better records, faster time, and finer physical specimens of manhood among the oncoming athletes.

Ambidexterity. One of the coach-fostered developments in form is the skilled use of either hand or either foot for the movement-pattern. Soccer began this emphasis long ago. Only in recent years has it become quite general to emphasize ambidexterity in basketball. Lacrosse and hockey are stressing this same versatility. Handball is by its nature a two-handed game.

Baseball is different. The switch hitters are uncommon and, in general, less successful than those who specialize in hitting from one side only. Only a few football men have been able to punt well with either foot. Buff Donelli was exceptionally good with either foot, perhaps because of his remarkable ability in soccer before he took up football.

There have been a few great ambidextrous tennis players. Geoffrey Brown, Wimbledon singles finalist in 1946, was a great player who used both hands or either hand on the racket. Recently an ambidextrous woman player in the United States, Beverly Joyce Baker of California, has been one of the top-ranking women players in the country. Miss Baker changes the racket from hand to hand and plays the ball on each side as if it were a forehand stroke.

Several other great tennis players have used two hands on the racket. They have been very effective with both the drive and the drop-shot. With their characteristic short swing, the opponent can not judge whether a deep drive or a drop-shot is coming. Besides G. E. Brown and Segura, McGrath, Bromwich, and Quist are famous international players who have used a two-handed grip of some sort. Their grips varied somewhat. McGrath used a double-handed backhand, for example, while Bromwich used two hands

on his right-side strokes and his left hand only for strokes to the left.

The trend in many competitive games seems to be more and more toward the use of either hand (or either foot) without preference. Moreover, childhood beginnings of sports training are becoming very common. It is conceivable that remarkable changes may occur in other sports-techniques in the next generation because of the development of skill with both hands and both feet indiscriminately.

The follow-through. There is some confusion in the literature of athletics about the follow-through. In some cases, the term is used to refer to continuation of high rate of movement or even an acceleration *from the instant of contact until the ceasing of contact*. In boxing, for example, the athlete is taught to "strike through" the opponent: to maintain or increase the rate of movement during the contact so that the "push" carries through farther and changes the opponent's position more sharply. Similarly, football blockers are taught to "block through" an opponent. If the blocker merely tries to bump an opponent, the opponent gives way with the contact and the blocker falls to the ground. The technique used is to keep contact, but if possible to continue blocker speed after the moment of contact so that the opponent is thrust completely off balance.

Wrist snaps at the last instant in striking acts are last-moment accelerations that literally do go into the object hit. High speed movies will show that the tennis ball, the golf ball, and the baseball are momentarily flattened by the impact of the blow, and that contact continues for a fraction of time after the first instant of contact. The distance for which this contact of implement and ball is preserved varies from perhaps an inch in a driven golf ball to almost a foot in a stroked tennis ball. Additional velocity can be added to the ball by continuing acceleration up to the last possible instant of contact. The attempt to impart a maximum of velocity by continuing the "high-speed push" is a kind of follow-through.

This meaning of follow-through differs very little from the prin-

ciple of running *through* first base instead of *to* first base on a "scratch-hit," or the principle of running *through* the tape instead of *to* the tape in a race in track. The purpose is to preserve a high rate of movement up to the last instant the rate is effective.

A type of follow-through also occurs in accuracy skills in which the athlete tries to guide a ball, for example, as far along its path to the target as possible. The basketball player may jump toward the basket, then continue his contact with the ball by a complete arm extension and a last bit of finger-tip guidance. The "drag-bunt," in which a batter shoves or pulls the ball down along the first-base line with his bat, is another example of guidance follow-through.

The term, follow-through, is often used to indicate the relaxing continuation of a swing, or body movement, after the cessation of applied force. In swinging a bat, for example, the arm and body movement may be permitted to continue after the swing until the body is reversed and the bat is over the other shoulder. This type of relaxing follow-through is customary in golf-driving. If the demands of the skill permit continuation of the swing, the follow-through saves energy that would otherwise be wasted in inhibiting it. If a motion must be stopped quickly, there is some danger that preliminary tenseness may occur in the muscles, thereby decreasing effective speed and accuracy. This possibility would seem to have been over-stressed by physical education teachers. Follow-through is a valuable part of the pattern in sports like golf or bowling, of course. The movements seem to be both easier and more precise. But those are sports in which an immediate, succeeding movement is unnecessary.

Tilden is said to have defeated one famous tennis opponent in the international matches by fast returns down the side of the opponent's just-completed stroke. The opponent had a long, graceful follow-through that was habitual and that slowed up his recovery for the next stroke. The same type of unreadiness for the next act, because of follow-through, occurs in other sports. A pitcher who follows through too much on his pitch is bunted out of the box.

A short gliding step and a preparatory stance are all the motions that are safe for a pitcher, after the ball leaves his hand, until the results of his pitch indicate his next move.

The boxer must check his swing after his misses and draw back almost as fast as he struck, or he is in a weak defensive position. Even after making contact, he must cover to protect himself from counter-punching. There is no percentage in exchanging blows, particularly if your opponent has the advantage of "being set" plus your own momentum to add effectiveness to his counter-punching. Instead of a relaxing follow-through in boxing, the athlete is taught to bring his hands back into defensive position as fast as he thrust them out.

Team sports usually leave no time for a relaxing follow-through. The right-handed batter, when he hits the ball, cuts off his full swing after the hit in order to get under way to first base more quickly. The ordinary sacrifice-bunt has no follow-through. Volleys in tennis have very little, the low volley none. Follow-through motions of a passer in basketball reveal the pass to the defense and increase the chances of interception. One principle of deceptive movements is the elimination of as much preliminary swing and as much follow-through as possible. Fortunately, the motions for best passing involve short movements with few revealing cues, whether the sport is basketball, lacrosse, hockey, or soccer. The long, flowing motion for beauty of form has little place in the fast action of a team sport.

"Tailor-made" form vs. "ready-made" form. Any coach-imposed form should permit individual modifications and adjustments. In track, for example, each runner is different. Strides differ, body slants differ, and sprint speeds differ. Some runners can pace themselves all the way and others rely on a strong burst of speed for the last two hundred yards. In the hurdles, as great a runner as Dillard depends more on speed than on orthodox form, for his winning. The mechanical principles used by successful individuals tend to be the same, but the various athletes have different lever lengths, body builds, speeds, endurances, and individuality in learning.

The field events also reveal considerable form adjustment to individuality. The various styles of high-jumping, javelin throwing, and pole-vaulting are generally the ones that have been easiest to learn for the respective athletes. In the shot put and the discus, size and strength cause adjustments in the footwork and in the amount of knee and trunk bend.

In team games, if the individual ranks high in explosiveness and reaction time, other variations occur. The good catcher can use a snapped-throw, with very little preliminary movement necessary, in his peg down to second base. The famous Dean brothers were supposed to be able to follow through so far on their pitching that bunting success seemed assured against them. Actually, their reaction time was fast enough to permit the longer follow-through and adept play of bunts, in addition. The tennis player with the quick reaction time can rely more on a volley, and can play better against difficult services by hitting the bouncing ball on the rise.

Some of the greatest scorers in basketball throw up a soft, "dead" ball that seems to "collapse" into the eighteen-inch ring if only four to five inches of the ball extend over the inner edge of the hoop. A few great scorers have been unable to keep their muscular tension from diffusing into their shooting movements, but they have compensated for the too-great forcefulness of the ball by adopting ball-english techniques to deflect the ball into the basket.

The teaching of form. It would seem that the coach should be acquainted with the variety of forms that have been used by successful athletes and with the techniques most successful in acquiring these forms. Then he should take into account the build of the athlete and his speed, strength, endurance, or whatever aspects are pertinent, and recommend a form. The form may be presented by: (1) having the beginner observe in action someone who has already perfected the form, (2) having the beginner observe pictures of the form as used by a great athlete, or (3) having the beginner observe coach demonstration, in slow motion, followed by attempt to imitate, and by whatever additional demonstrations or verbal guides seem helpful.

These early practices seem to be more effective if they are at-

tempts to grasp the gross-movement of the form pattern. Demonstrations probably should be at a slower speed during early learning especially if the skill is complex. The learner should rarely attempt to grasp more than the general outline, the gross-movements, in his first imitations of the model set. Adoption of the sound mechanics of the form pattern seems to be learned most rapidly from practice with the gross patterns as the basis. These gross patterns include such aspects as most advantageous preliminary posture for quick action, proper angle of force application, steady postural base for throwing or striking movement, long arc for increasing velocity, short arc for quick release, and the like.

The gross-movement as the beginning of skill-learning means a taking on of the general nature of the total form-pattern in its larger movements, at least. This total-design approach is easier for the learner, makes his learning faster, and permits individual adjustments as practice progresses. The basic mechanics should be preserved but not too much attention should be placed on the small details of individual adjustment; for example, in baseball the beginning batter might be started with a quite wide foot-spread. This wide base will tend to delay and shorten his step toward the ball. The step, when he does take it, will skim the ground. His grip on the bat should be a few inches in from the end of the handle to help him in accuracy. The boy should be taught to hold his head still and to watch the ball all the way from the pitcher's hand to the bat. Individual adjustments can be permitted in position in the batter's box, hand grip, width of stance, and forward-step, as practice progresses. Once the boy grasps the basic movements so that he can make them reasonably well as far as mechanics of swing are concerned, little attention should be focused on form. Many of his individual-form adjustments will be adopted unconsciously. If the boy watches the ball and takes his short, gliding step, the other adjustments are likely to be ones that are advantageous to his own success. Of course, he will be an unusual boy if he does not want to start with too long or too heavy a bat.

It should be understood by the coach that the standard form he imposes on the boy is only hypothetically the one most suitable.

This imposed form will usually be successful for early attainment of the lower skill levels. The progress of the athlete to the advanced levels will be partially dependent on the athlete's continual revision of details of his movements. Moreover, in the complex skills, progress will be somewhat dependent on the degree to which the athlete learns to generalize the form so that it can be adapted to varied situations. Basket shooting, batting, and throwing must be continually adjusted to distance, opposition, and other factors. Wet tracks and dry tracks necessitate adjustments in running; so does a strong wind or a different type of terrain.

The youngster will be more plastic in his form adjustment. The older athlete may start off with faster and steadier learning by adapting many of his old movement-habits to the new skill, but some of these movements will not fit as well as they should. Coaches refer to this teaching problem when they say they want the athlete who has not yet developed bad habits. The beginner has fewer patterns to transfer, and is more likely to fit newly acquired patterns to the form prerequisites. Coaches like to begin their coaching with the young boy so that he learns the specific form or performance pattern from its beginning, instead of making it up from a composite of already partly-learned patterns that do not quite fit. But the learning process takes much time. It is necessary for coaches in "big time" competition to take those athletes already far advanced in skills and make whatever adjustments time and the regimen of competition permit.

One other caution should be observed in teaching a form suitable for many of our competitive games. There will be some great athletes who can not perform in a manner that will appear graceful, or in such a way that the skill seems easily done. Often a team-game form adjusted to an individual of great strength does not look "pretty" even if it is both highly successful and the easiest way *that particular individual* can perform the skill. There have been a few great professional baseball infielders who knocked occasional grounders down with their legs and abdomens, picked them up, and threw the runner out at first base. In track, power runners generally do not look as graceful as the long, slim runners. The two-

handed stroking of the tennis players, mentioned earlier, does not look as graceful as one-handed stroking. The modern game of basketball has its "greyhounds" but it also has its "whippet tanks." There is form for beauty, ease and grace, and form to win a ball game. The two are not always identical.

Discussion Questions

1. What is form? Is beauty of appearance, mechanical efficiency, or economy of motion and energy the best criterion of "good" form?
2. May the coach and the boy have different purposes that affect the type of form preferred?
3. What is the relationship of form adopted to age of the athlete?
4. Are there any differences between "sound mechanics in form" and "economy of energy in form"?
5. Does the beginning athlete need to learn movement selection and coordination, or "how to make the specific movements"?
6. What are some of the harder problems of skill learning?
7. May body momentum be a disadvantage in a skill act? Give examples from athletic performance.
8. What is the relative timing of the rear knee extension to the wrist snap in the throwing act?
9. How does the need for deception in sports affect the form used?
10. How does a longer arm or a longer leg affect the form adopted?
11. What are the reasons for the longer last stride in the high jump as contrasted with the shorter last stride in the broad jump?
12. What are the accepted "best angles" of release of the javelin, the discus, and the shot, respectively?
13. Why do baseball outfielders turn around to run after a long fly instead of running backward or sideways? Is the same principle applicable to guarding in basketball?
14. What does degree of body slant have to do with rate of speed in running?
15. Why does the catcher frequently take a complete turn, after fielding a bunt, for his throw to first base?
16. What is the physical principle underlying the idea that a boxer should have his body weight behind his punches?
17. How does the form adopted affect the frequency of opportunity for use?

18. In what sports is beauty of form important in winning?
19. What is the procedure necessary to conceal evidence of slight errors in one's routine in gymnastics?
20. Distinguish between *apparent* ease and real ease of performance. Give examples from athletics of apparent ease in extremely difficult types of performance.
21. What are some of the aspects that make up beauty of form in diving? In figure skating? In gymnastics?
22. Why does the standing position in rifle shooting involve a narrow base but the standing position in archery a relatively wide base?
23. Explain the difference between the pitcher's stance when no runner is on base and that when a runner is on base.
24. Explain how an athlete can be running and still preserve a preparatory posture for expected skill performance.
25. What is the reason for the rigid front-leg in batting? Give other examples from athletic sports of this same principle.
26. Why does the football blocker keep a straight trunk at the instant of contact with the opponent? Why does the bowler keep a straight back when he is releasing the ball?
27. What are the form adjustments for quick stop? For quick change of direction?
28. Why does the preparatory action of the moving athlete usually involve ground-skimming steps instead of the bouncing stride of the track man?
29. How does tension affect steadiness? How does fatigue affect it? Leg strength?
30. How do higher speeds and longer arcs affect balance?
31. Explain the concept of relaxation as "specificity of energy flow" (as contrasted with diffusion).
32. Is the "jiggle" or the wiggle of body-parts to induce relaxation inclined to be effective?
33. What is the relationship of the type of support (bony framework or muscular) to degree of relaxation?
34. Explain the relationship of head position to attention, and of focus of attention to form.
35. Is "peak of attention" control an aspect of form learning?
36. Should the athlete focus his attention on his own movements?
37. International competition has indicated that championship form may vary with the athlete's geographical background. Explain.

38. Why is there such great diversity of form among basketball players?
39. To what extent is suitable form specific to the individual?
40. How do we arrive at new and better forms in athletics?
41. In what sports do you think emphasis on ambidexterity may increase in the next generation?
42. What are the two concepts of the purpose of the follow-through?
43. Why is the relaxed follow-through a disadvantage in many team games?
44. Should form be "tailor-made" or "ready-made"?

Test Questions

1. Are beauty of appearance and mechanical efficiency synonymous terms when discussing form in athletics?
2. May the coach and the athlete have different purposes that affect the type of form preferred by each?
3. Are there any differences between form adopted for economy of energy and form adopted for sound mechanics?
4. May individual parts of the body need to acquire skill acts that can compensate for conflicting body momentum?
5. Does need for deception in sports affect the form chosen?
6. Does a longer arm or a longer leg tend to affect the most suitable form?
7. Are the last stride in the high jump and the last stride in the broad jump approximately the same length?
8. Is the same principle of turning around to run after a long fly in baseball applicable to guarding on longitudinal cuts in basketball?
9. Does it slow up the boxer to try to hurl his weight behind his punches?
10. Does the type of form adopted tend to affect the frequency of opportunity for use in team games?
11. Is it a part of the art of gymnastics to be able to conceal one's errors?
12. Are *apparent* ease and *real* ease the same thing in sports performance?
13. Do archery and rifle shooting involve about the same width of base?
14. Should the front knee in batting be slightly bent?
15. Is the last step before a quick stop shorter than those preceding?

16. Does higher tension in the leg and trunk muscles tend to make one less steady in posture?

17. Is muscular support (support with angles at joints) more relaxing than support over joints and bony framework?

18. Has the form adopted been somewhat related to geographical location?

19. Is suitable and most efficient form to a great degree specific to the individual?

20. Is it advisable to insist on the use of a relaxed follow-through in the throwing and striking movements of sports?

21. Are attention focus and attention control a part of form learning?

22. Is economy of energy use the main purpose of the follow-through?

23. Is relaxation in sports skills a matter of specificity of energy flow, in contrast to wider diffusion?

24. Has ambidexterity been proven a disadvantage in tennis?

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Appendix

Supplementary discussion questions. If more are desired, consult E. C. Davis and John D. Lawther, *Successful Teaching in Physical Education*. Second edition. New York: Prentice-Hall, Inc., 1948. Pages 356-357, 377-385.

I. True—False

1. Winning in itself is of no educational value.
2. The main purpose of the coach is to teach youngsters the formal and technical aspects of organized games.
3. The coach is a mechanic of skill rather than an engineer of growth and development.
4. As a general rule the "social distance" between the coach and the athlete is greater than between the student and the academic teacher.
5. A sound body means a highly muscular body.
6. Self-control is an objective of sports education.
7. Other things being equal, the coach who has been a great athlete is preferable to the coach who has been a mediocre athlete.
8. In order to decrease the individual differences in youth, coaching should teach conformity rather than individuality of behavior.
9. The best law of learning for the coach would be "to drive and drill" until those who make the team conform to the coach's conception of the best system.
10. The successful coach must stay physically young and continue to possess the enthusiasm of youth.
11. Continuous drill is a guarantee of continuous improvement in the skills upon which the drills are focused.
12. If time is available, practices twice a day are advantageous throughout the sport season.
13. Complicated skills will occasionally need to be broken up into separate units for practice on fundamental movements.

14. The less the emotion accompanying the learning process, the greater the learning.
15. A pupil's knowledge and approval of the purpose of the specific skill practice increase his rate of learning.
16. Rating scales are of little value in team selection and improvement.
17. Knowledge of errors into which the student of skills falls should be kept from him lest he become confused and discouraged about learning.
18. Rest is most effective when well distributed over the working time; that is, periods of relaxation will increase the effectiveness of the total working time.
19. Good equipment improves the learning attitude.
20. Practices should be varied both in method and activity.
21. The practice period should be one of tense activity from beginning to end.
22. Telling alone has little efficacy as a teaching device in motor skills.
23. The coach does not know what the athlete should practice until analysis shows just what level of the skill has been attained to date.
24. Practice of fundamentals must be so arranged as to make the student aware of their specific application in the game situation.
25. The same amount of practice should be given every boy.
26. The coach should select his team from boys having approximately equal motor educability.
27. "Cramming" is an efficient method of preparing for motor skill performance.
28. Practicing fundamentals in separate practice units until they are learned guarantees coordinated game performance.
29. Men should be fitted to the schedule, not the schedule to the men.
30. Practice should be work instead of play.
31. Rest days are usually deleterious to game performance.
32. Other things being equal, the greater the excess in the number of offensive and defensive plays and formations, the "greener" the team will be.
33. A player should be allowed to practice at least as long as he wants to.
34. Other things being equal, the team keyed to the highest emotional pitch will win.
35. It is best to have players sit around in seclusion the day of the game, and think about the approaching crucial contest.

36. Sportsmanship implies that winning the contest is of secondary importance to enjoying the activity.

37. The jinx is an alibi, conscious or unconscious.

38. As a general rule, superstitions should not be discouraged by the coach.

39. A hunch may be based on previous but consciously forgotten experience.

40. "Yellowness" is learned and can be reconditioned, in many cases, where time and opportunities permit.

41. An understanding of the nature of stage fright may help the athlete perform efficiently in spite of it.

42. Any "nervousness" at the start of the game is undesirable because it decreases the efficiency of the player.

43. Adrenal gland stimulation decreases energy available for skill performance.

44. Nervousness accelerates digestion; therefore the high-strung player should be allowed extra food the day of a game.

45. Rest is a good way to avoid staleness.

46. One can increase his indirect vision by practice.

47. Excellent indirect (peripheral) vision is highly desirable in many games.

48. The correlation between motor intelligence and academic intelligence is high.

49. In motor learning when the movement involved has not already been mastered, the initial connection is secured by the *trial and error* method.

50. Continuing practice after a certain length of time is not profitable.

51. All repetitions are of equal value.

52. Fatigue comes more quickly in non-habituated work than in habituated work.

53. The athlete can learn much about skills through becoming acquainted with the experience of others.

54. One increases interest in the activity by making it easier to perform.

55. A team should be uniform in technique of motor skill behavior: same batting stance, shooting form, and so on, for each team member.

56. Youngsters should, as a general rule, be urged not to imitate "stars."

57. At the beginning of learning the skill, the student should be shown all the successful techniques, and urged to experiment with all of them.

58. We may weaken a habit by repeating it.
59. Youngsters should be allowed to set their own standards of practice and skill level.
60. Since the whole equals the sum of its parts, games should be broken up into elements and minute skills for most efficient practice.
61. The skilled athlete tenses fewer muscles per unit than the unskilled athlete.
62. Individuated body-part control characterizes the beginning student of motor skills.
63. The beginner learns to make correct movements by making innumerable incorrect movements.
64. Escape to a higher level of performance usually comes in moments of intense interest and absorption in an activity.
65. Reward and punishment are always present when any learning takes place.
66. In learning a complex skill, one begins with a mere framework—an orientation toward a goal, but the action pattern develops as parts become incorporated into this framework.
67. Health is the main aim of the sports activities.
68. Accurate distance and space perceptions in sports are learned abilities resulting from much practicing in perceiving distance and space in those sports.
69. One's perception of distances in playing areas varies with the background of the playing area.
70. "Getting the feel" of the skill performance means learning the syndrome of somatic perceptions accompanying excellent skill performance.
71. New ideas about how to be more effective in a game situation result from putting bits of former experience together into a new arrangement.
72. Many experienced coaches have a tendency to weaken their teams' effectiveness by attempting to teach too many plays.
73. "Nothing succeeds like success" is a saying illustrating the fact that favorable attitudes accompany success and accelerate further learning.
74. Generally speaking, failure facilitates learning.
75. One tends to remember movements that have been successful better than those that have not.
76. Other things being equal, it is harder to teach the athlete than the nonathlete an entirely new sport.
77. Deception in athletics is based on devising means of directing the

attention of the opponents elsewhere than where it could function most effectively for their success.

78. Habits take care of many adequate responses to stimuli without distracting the focus of attention from the major objective of the moment.

79. A shift play in football is more deceiving if all the men shift in the same general direction.

80. "Razzing" may stimulate a veteran player to better performance.

81. Good generalship of a quarterback on the field of action illustrates processes of constructive thinking.

82. In general, if athletes are left to their own devices, they work at lower levels of efficiency than are economical.

83. The attention of the learner should be focused on results rather than form during skill practice for "whole" learning.

84. Most of the motor activities in common skill performances are exceedingly difficult to perceive sufficiently well for imitation.

85. Slow-motion pictures are of little value in guiding motor skill learning.

86. The coach should not take time to listen to the advice of townspeople and alumni.

87. Frequent changes in the rules of football and basketball indicate rapid developments of those games.

88. Scientific evidence indicates that even healthy girls are likely to be harmed physiologically by participation in interscholastic sports.

89. Girls should *never* play boys' rules in basketball.

90. Warming up and tapering off have sound physiological justifications.

91. "Keep your eye on the ball" is a good axiom for both offensive and defensive men to follow in most team games.

92. One can increase his peripheral (indirect) vision by practice.

93. Repetitions for drill purposes are of equal value irrespective of other factors.

94. Getting a "general idea" of what is to be learned is the proper initial step of the motor skill learning process.

95. A specific sport may be taught successfully by two coaches even though their methods are very dissimilar.

96. Scientific study of teaching methods has shown that there is one best way to teach each specific skill.

97. Sex differences necessitate distinctive athletic programs for the two sexes.

98. All interschool competition for girls should be discouraged.

99. General directions to try harder, to fight harder, to expend all one's energy, and the like, are of great value in teaching specific motor patterns.

100. Specific attention to improvement of *parts* of motor pattern activities while the *whole* activity is being practiced might be more productive of improvement than separate drill on those parts.

101. It might be good coaching technique to give more praise to the second or third team than to the first team.

II. Sentence Completion

1. Plateaus are caused by:

- Lack of
- Approach to the physiological
- Increasing complexity of the essential for the next higher order of performance.
- Accidentally introducing some wrong into the skill pattern.

2. One of the hardest problems of the novice football scout is to learn not to watch the

3. Sources of overconfidence:

- several games in succession.
- Too much against a weak team.
- Unfortunate publicity.
- A good

III. *Multiple-choice*: Select the most nearly true or best answer as judged from opening statement.

1. The best treatment for infraction of training rules is to: *a.* fire; *b.* feign ignorance; *c.* disregard; *d.* redirect.

2. One of the primary functions of a practice session is: *a.* to make sure that the better players master the skill; *b.* to discover loafers; *c.* to develop strength; *d.* to stimulate cooperative effort toward improved skill and efficiency.

3. The natural athlete has: *a.* more instinctive movements; *b.* greater motor intelligence; *c.* wider athletic experience; *d.* the fastest reaction time.

4. In teaching athletes a new foot movement technique, the best results can be obtained by: *a.* having them observe pictures of the move-

ment and then practice; *b.* having them move in slow motion with careful explanation before each movement; *c.* having them practice imitating a living model; *d.* having their steps controlled by exactly placed foot-boxes.

5. Excitement: *a.* improves coordination; *b.* retards digestion; *c.* improves thinking ability; *d.* decreases effort.

6. Ball handling is improved by: *a.* tenseness; *b.* razzing; *c.* relaxing certain muscles; *d.* dextrose pills.

7. A good athlete has: *a.* lots of experience; *b.* correct health habits; *c.* certain motor skills; *d.* a high I.Q.

8. Learning a motor skill includes: *a.* conscious analysis; *b.* trial and error learning; *c.* attention to form; *d.* winning the game.

9. Pep talks before the game: *a.* improve efficiency; *b.* release adrenalin; *c.* take up time; *d.* increase the chances of winning.

10. Sportsmanship: *a.* helps one to win; *b.* increases the coach's salary; *c.* adds to the gate receipts; *d.* has social value.

11. Varsity athletics are justifiable in education if they: *a.* improve body control habits; *b.* furnish vocations for coaches; *c.* pay for themselves by gate receipts; *d.* perfect specific skills.

12. Great athletes excel mediocre ones in that they have: *a.* better footwork; *b.* more speed; *c.* greater size; *d.* more effective performance.

13. Rule changes result from: *a.* developments of the game; *b.* prejudices of coaches; *c.* size of participants; *d.* unfair tactics.

14. The desire to win is: *a.* socially undesirable; *b.* a common human urge; *c.* entirely instinctive; *d.* the natural result of a capitalistic society.

15. The purpose of awards is to: *a.* compensate for injuries; *b.* distinguish the successful from the unsuccessful; *c.* provide fond memories; *d.* increase the interest in the activity.

16. In training a quarterback (or field general) one should: *a.* lay down rules sufficiently general to fit all situations; *b.* give him practice in a wide variety of situations; *c.* have him memorize the points of difference between a good and bad quarterback; *d.* give him practice in only those situations in which he can form habits of correct performance.

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